

**PROJECT SCHEDULE
NOTICE TO BIDDERS**

PROJECT SCHEDULE

Newspaper Advertisements:	Amador Ledger Dispatch and other regional newspapers Date: Friday, January 26, 2024 and Friday, February 2, 2024
Mandatory Pre-Bid Conference:	Date: Thursday, February 8, 2024 Time: 9:00 A.M. Place: Buena Vista Landfill 6500 Buena Vista Rd Ione, CA. 95640
Bid Opening:	Date: Thursday, March 7, 2024 Time: 1:30 P.M. Place: Amador County Purchasing Office 12200 B Airport Road Martell, CA 95654
Questions by bidders concerning discrepancies in or omissions from the Drawings or Specifications shall be made no later than:	Date: Thursday, February 29, 2024 Time: 5:00 P.M. Place: Public Purchase http://www.publicpurchase.com
Anticipated Award of Bids and Contracts Approval Scheduled:	Date: Tuesday, March 26, 2024
Anticipated Contract Starting:	Date: Monday, June 3, 2024
Anticipated Contract Completion:	Date: Friday, October 25, 2024

NOTICE TO BIDDERS

Notice is hereby given that Amador County General Services will receive sealed bids as follows:

INVITATION TO BID 24-01

FOR:

BUENA VISTA LANDFILL PROJECT

CONTRACTOR LICENSE REQUIRED: Class A (GENERAL ENGINEERING)

PROJECT DESCRIPTION SUMMARY:

The County of Amador is seeking sealed bids for the furnishing of all labor, tax, bonds, insurance, permits, premiums, shipping, transportation, services, disposal, equipment, materials, and appurtenant facilities for the Amador County Buena Vista Landfill Project at 6500 Buena Vista Rd. Lone, California. The Work includes, but is not limited to, removal and replacement of the cover on Class III Phase I Waste Management Unit (WMU-I) and the expansion of the Class II Surface Impoundment to comply with requirements of the Central Valley Regional Water Quality Control Board.

INSTRUCTIONS TO BIDDERS:

A **mandatory** Pre-Bid Conference will be held at **9:00 a.m., Thursday, February 8, 2024**, at the Amador County Buena Vista Landfill Site at 6500 Buena Vista Rd. Lone, CA 95640. Attendees should gather at the parking lot on site and we will walk to the two project sites from there. All attendees must attend until the County closes the conference at which time a sign-in sheet will be distributed. In order to be considered a bidder for this work the County must have the bidder's signature and contact information on its sign-in sheet. **Attendance at this meeting is required in order to submit a bid for this project.**

Qualified bidders may acquire a bid package at the office of General Services Administration located at 12200 B Airport Road, Martell, CA, 95654 **between the hours of 9:00 a.m. 4:45 p.m. Monday through Friday**; or downloaded from Public Purchase website at www.publicpurchase.com.

Sealed bids shall be received by the County of Amador Purchasing Office; by U.S. Mail at 12200-B Airport Road, Jackson, CA 95642; or delivered in person, U.P.S., Federal Express, or by any other courier to 12200-B Airport Road, Martell, CA 95654, until **1:30 p.m., Thursday, March 7, 2024**, at which time, sealed bids will be opened and read publicly at the General Services Administration located at the above Martell address. Bids received late will be rejected and returned unopened.

Funding guidelines require the successful bidder to seek, and they are encouraged to use, DBE's for their procurement needs. The DBE Goal for the project is fifteen percent (15%).



INVITATION TO BID

Bid and Contract Documents for:

AMADOR COUNTY BUENA VISTA LANDFILL IMPROVEMENTS
IONE, CALIFORNIA

MANDATORY PRE-BID CONFERENCE
Thursday, February 8, 2024
9:00 a.m.

AMADOR COUNTY SEALED ITB NO. 24-01

BID OPENING DATE
Thursday, March 7, 2024
1:30 p.m.

AT:

AMADOR COUNTY GENERAL SERVICES ADMINISTRATION
PHYSICAL LOCATION: 12200-B AIRPORT ROAD, MARTELL, CA 95654
MAIL: 12200 AIRPORT ROAD, JACKSON, CA 95642

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NOTICE TO BIDDERS

**COUNTY OF AMADOR
INVITATION TO BID
Buena Vista Landfill Improvements
SEALED BID No. 24-01**

NOTICE IS HEREBY GIVEN:

The County of Amador is seeking sealed bids for the furnishing of all labor, tax, bonds, insurance, permits, premiums, shipping, transportation, services, disposal, equipment, materials, and appurtenant facilities for reconstruction of the Class III Phase I WMU final cover and expansion of the geosynthetic lined Class II Surface Impoundment. Said bids shall be in accordance with the Bid Information and Documents contained herein and with the laws and regulations set forth by the State of California, building codes and all other applicable regulations.

Sealed bids shall be received by the County of Amador Purchasing Office; by U.S. Mail at 12200-B Airport Road, Jackson, CA 95642; or delivered in person, U.P.S., Federal Express, or by any other courier to 12200-B Airport Road, Martell, CA 95654, until **1:30 p.m., Thursday, March 7, 2024**, at which time, sealed bids will be opened and read publicly at the General Services Administration located at the above Martell address. Bids received late will be rejected and returned unopened.

A **mandatory** Pre-Bid Conference will be held at **9:00 a.m., Thursday, February 8, 2024**, at the Amador County Buena Vista Landfill Site at 6500 Buena Vista Rd. Ione, CA 95640. Attendees should gather at the parking lot on site and we will walk to the two project sites from there. All attendees must attend until the County closes the conference at which time a sign-in sheet will be distributed. In order to be considered a bidder for this work the County must have the bidder's signature and contact information on its sign-in sheet. **Attendance at this meeting is required in order to submit a bid for this project.**

PROJECT DESCRIPTION

Phase I Class III WMU Final Cover Reconstruction

A field investigation of the Class III Phase I WMU final cover revealed most of the Phase I final cover appeared to be functioning properly. However, large desiccation cracks had penetrated the final cover through the low-permeability layer. These cracks allow surface water to infiltrate through the landfill final cover into landfilled wastes, creating leachate. The Central Valley Regional Water Quality Control Board required remediation of the final cover system failure.

Amador County proposes to reconstruct the Class III Phase I WMU final cover to meet the prescriptive standard of Title 27 of the California Code of Regulations. As shown on the plans and technical specifications, the reconstructed final cover will consist of the following layers, from top to bottom:

- A 1.5-foot thick vegetative layer – This thicker vegetative layer, combined with more frequent repair of desiccation cracks will reduce the potential for desiccation cracks to extend through the low-hydraulic conductivity layer described below. In addition, the technical specifications require mixing compost into the top six inches of the

vegetative soil layer to promote vegetative growth and reduce the potential for deep desiccation cracks.

- A 1-foot thick low-hydraulic-conductivity layer, or low-permeability soil layer, ($k = 1 \times 10^{-6}$ cm/sec).
- A 2-foot thick soil foundation layer.

As shown on the plans, the area north of Phase I will be the borrow area for this project.

Class II Surface Impoundment Expansion

An updated water balance indicates raising the sides of the impoundment by approximately 2.45 feet is necessary to provide the capacity required by the facility's Waste Discharge Requirements (WDR). Increasing the height of the berms by this amount will provide the capacity necessary to accommodate the wettest year on record and the precipitation from a 1,000-year, 24-hour rain event, while still providing the minimum 24 inches of freeboard required by the WDR.

Amador County proposes to increase the height of the perimeter berms that form the upper sides of the impoundment by at least 2.45 feet. The construction plans, technical specifications, and CQA Plan describe installation of a new 60-mil, double-sided (textured on both sides), HDPE geomembrane liner directly above the existing Hypalon liner in the impoundment. The specifications and CQA Plan include provisions for conducting an ELLS on the new liner to check for defects including installation of a wire grid beneath the new liner and above the existing liner (i.e., between the old and new liners) to be used during the ELLS because the space between the old and new liners will be filled with relatively non-conductive air. As shown on the plans, the previous borrow area situated north of Phase I waste management unit will be the soil borrow area for the earthwork portion of this work.

INSTRUCTIONS TO BIDDERS

1. Bidders are required to register on the Public Purchase website at: <https://www.publicpurchase.com/gems/amadorco.ca/buyer/public/home> to acquire bid information. If interested parties are not able to register via the website, hard-copies may be obtained at the Office of General Services Administration located at 12200-B Airport Road, Martell, CA. 95654, telephone (209) 223-6375. Bidders must familiarize themselves with the website and its requirements to ensure bidders can receive electronic information and notifications relative to Bid information and documents, including: receiving any changes, answers to questions, addenda, specifications and drawings, etc. Once a Bidder has registered, all other inquiries and information regarding this Bid may be accessed using the Public Purchase website home page at: www.publicpurchase.com.
2. Each bidder shall visit the site(s) of the proposed work, and shall observe conditions in order to be fully informed as to the materials, equipment, labor and workmanship required and the conditions under which they shall be furnished and placed. **A mandatory pre-bid meeting will be conducted at 9 am. on February 8, 2024, at the Buena vista Landfill Site at 6500 Buena Vista Rd. Ione, CA 95642. Attendees should gather at the parking lot on site and we will walk to the two projects sites from there. Attendance at this meeting is required in order to submit a bid for this project.**
3. Should a bidder find discrepancies in or omissions in the Bid information and documents, or be in doubt as to their meaning, the bidder shall email questions to

www.publicpurchase.com. All communication relative to the Bid information and documents shall be directed to www.publicpurchase.com. No oral responses to any questions concerning the content of Bid information and documents will be given; all responses will be in the form of written addenda or response which will be posted to www.publicpurchase.com. Questions by bidders concerning discrepancies in or omissions from the Bid documents and information shall be made no later than **Thursday, February 29, 2024, prior to 5:00 p.m.**

4. Bidders and their subcontractors are responsible for reviewing all Bid information and documents in their entirety. Failure or neglect to follow instructions shall not relieve the Bidder of his/her responsibilities nor entitle him/her to additional compensation for work or materials overlooked and not included in his/her Bid.

SUBMISSION AND RECEIPT OF BIDS

1. Sealed bids shall be received by the County of Amador Purchasing Office; by U.S. Mail at 12200-B Airport Road, Jackson, CA. 95642; or delivered in person, U.P.S., Federal Express, or by any other courier to 12200-B Airport Road, Martell, CA 95654, until **1:30 PM, Thursday, March 7, 2024**, at which time sealed bids will be opened and read publicly at the Office of the General Services Administration located at the above Martell address. Bids received late will be rejected and returned unopened.
2. Bids must be submitted in a sealed opaque envelope. **Your return address and the Bid number (24-01) must appear on the outside of the envelope.** Bids must be submitted on the bid form(s) provided herein. Other bid formats will be rejected.
3. Each page should be properly completed with all items filled out, signed with blue ink, and executed by an individual who has authority to act on behalf of the entity submitting the Bid.
4. County reserves the right to postpone the date and time for submission of bids.
5. The Bid amount is all inclusive. No additional charges, fees, taxes or cost for any other items, incidental or otherwise, whether or not identified in the Bid information and documents or by Bidder, will be allowed.
6. The County of Amador is not responsible for failure of the U.S. Mail or private couriers to deliver bids by the submission deadline.

Mail: Amador County General Services Administration, 12200-B Airport Road, Jackson, CA. 95642;

Physical Location: Amador County General Services Administration, 12200-B Airport Road, Martell, CA. 95654.

Normal business hours are Monday through Friday 8:00 a.m. to 5:00 p.m. and staff can be reached at (209) 223-6375.

7. Telegraph, Facsimile (FAX), and E-Mail bids will not be considered.

8. The following forms and bid documentation information must be included in your sealed bid, failure to provide this information may deem your bid non-responsive:
 - a. Copy of Contractor's License
 - b. Cash, cashier's or certified check payable to County, or bid bond
 - c. Bid Form
 - d. Exceptions to Bid Conditions and/or Specifications (only if applicable).
 - e. Bidder's Acknowledgement Form (listing all addenda issued by County)
 - f. Reference Form
 - g. Contact information Form
 - h. Guaranty
 - i. Subcontractor Listing Form
 - j. Minimum Wage Rate Certification
 - k. Bidder's Declaration
 - l. Non-Collusion Affidavit (notarized per Public Contract Code Sec.7106)
 - m. Declaration Re: Disqualification, Removal, or Prevention from Bidding.
 - n. Public Contract Code 10232 Statement
 - o. Public Contract Code Section 10162 Questionnaire
 - p. Federal Certifications and Disclosures
9. Erasures or corrections on bids should be initialed in **blue ink**. Each Bidder shall be deemed to have authorized any such erasures or corrections. Bids should be signed in **blue ink**. All amounts should be typewritten or completed in **blue ink**.
10. Submission of a signed bid will be interpreted to mean that the bidder has thereby agreed to all conditions, instructions, descriptions and information contained herein.

BID WITHDRAW

1. No Bid may be withdrawn after the time established for receiving bids. Prices bid are considered accurate and cannot be withdrawn after the bid is opened.
2. You or an authorized agent may withdraw a bid before the bid opening date and time by submitting a written bid withdraw request at the location where the bid was submitted. Withdrawing a bid does not prevent you from submitting a new bid.

TIME LIMITS

1. Contractor shall carry out the work at all times with the greatest possible dispatch and complete the entire work for the Buena Vista Landfill Improvements within 147 days as defined in General Conditions 1.00 or by October 25, 2024.
2. Contractor shall begin work within FIFTEEN (15) working days after receipt of a Notice to Proceed from County's Project Manager and shall diligently prosecute the Work to completion in strict accordance with the Contract Documents.

LEGAL REQUIREMENTS, COMPLIANCE WITH BID REQUIREMENTS AND APPLICABLE LAWS

1. The attention of Bidders is directed to the Bid documents and information, including but not limited to the following: Project Manual: Invitation to Bid 24-01, Construction Contract, General Conditions, Volume 1 General Requirements Division 01, Volume 1 Technical Specifications Divisions 02 through 33 and As-Built Drawings (Phase 1 Landfill Gas Extraction System and Post Closure Maintenance Construction Drawings

2002) Vector Engineering, Inc. Construction Quality Assurance and Quality Control Plan. Drawings and Plans (ITB 24-01 Bid Set Plans APTIM/NV5 **and all applicable State and federal requirements contained herein**. The aforementioned items are incorporated herein by reference. The following items apply to this work:

1. **Notice:** A Contractor or Subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for Public Work, as defined in this chapter, unless currently registered and qualified to perform Public Work pursuant to Section 1725.5 of the Labor Code. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform Public Work pursuant to Section 1725.5 of the Labor Code at the time the contract is awarded.
2. Bidders shall furnish security in an amount equal to ten percent (10%) of the total amount of the bid (Public Contract Code Section 20129 & 20483), in the form of cash, a certified or cashier's check payable to the County, or a Bid Bond. If the bidder submits a Bid Bond, the bonding surety must be admitted to do business in the State of California. The successful bidder shall be required to furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract price and, if contract price exceeds \$25,000.00 dollars a Payment Bond in an amount equal to one hundred percent (100%) of the Contract price. All bonds (Bid Bond, Performance Bond, and Payment Bond) must be obtained from a surety admitted under the laws of the State of California and satisfactory to the Amador County Board of Supervisors.
3. The Contractor shall conform to and abide by, including but not limited to, all Federal, State, and local building, labor, and safety laws, ordinances, rules, and regulations.
4. Contractors or subcontractors who have violated state law governing public works shall be denied the right to bid on this public works contract as set forth in California Labor Code section 1777.7.
5. Contract retention under this Contract shall be five percent (5%). The County will permit the successful bidder to substitute securities for any retention monies withheld to ensure performance of the Contract (see "Right to Substitute Securities" below).
6. Those submitting bids should complete and return with their bid all forms listed herein as required.
7. No person, firm or corporation, shall be allowed to make, or file, or be interested in more than one (1) Bid for the same item(s) or work.
8. Said Bids should be in accordance with the Bid information and documents contained herein and shall conform to and abide by, including but not limited to, all Federal, State, and local laws, ordinances, rules, and regulations.
9. All work and materials shall be in full accordance with the latest rules, regulations, and any/all other applicable laws set forth by Federal, State, and local jurisdictions.
10. All prices shall be retained for sixty (60) days from the date of the bid opening and be inclusive. Upon award, prices will be in effect for the term of the contract.

11. Providing false information may result in criminal prosecution or administrative sanctions. Signing this Bid on the signature portion thereof shall constitute acknowledgement Bidder has not provided false information.
12. All bids shall include preparation, transportation and delivery charges fully prepaid by the successful bidder to the destination specified. Delivery of materials, equipment and all Work is F.O.B. Destination, Freight Prepaid to the location where the Work is to be performed. Due care shall be exercised in packing, handling and shipping to assure equipment and materials arrive in excellent condition. Equipment and materials arriving in other than excellent condition shall be the responsibility of the successful bidder.
13. In the event after award, equipment and/or materials are delivered to County which does not comply with standard approved specifications listed in the Bid information and documents and has not been approved by County, the Bidder and/or Contractor upon notification, shall immediately remove from the premises any such equipment and/or materials and replace it in full accordance with the specifications outlined herein.
14. If this Bid is awarded, and the successful bidder fails to sign and return to the Director of General Services Administration within ten **(10) days** (i) the Contract, (ii) the bonds in the amounts required by the State Contract Act, and (iii) the required insurance certificates as specified in the Bid information and documents with an insurer satisfactory to the County Risk Manager, the County may, at its option, determine the bidder has abandoned the Contract. In that case, the bid and the acceptance thereof shall be null and void, and the bid security shall be forfeited and become the property of the County of Amador.

QUALIFICATIONS

Qualified bidders submitting bids shall have the minimum qualifications stated below, and include, as a part of the bid documentation, the information outlined below. County reserves the right to reject any bid not containing the following information:

1. An Active California A General Engineering Contractor's License in good standing is required to bid this work and enter into the Contract. In accordance with Public Contract Code section 3300, each bidder must provide proof and submit with his/her bid a copy of his/her California State Contractors License(s), unless the bidder is a joint venture or the project involves federal funding. The license must be maintained in good standing throughout the term of the Contract.
2. Subcontractor's Licenses: All subcontractors must be properly licensed by the CSLB to perform construction work they will be undertaking and must maintain their licenses in good standing throughout the terms of the Contract.

EVALUATION AND AWARD OF BIDS

Selection of the successful bidder will be determined by evaluation of the following:

1. Price and proposed fees. (In accordance with Public Contract Code section 20103.8, The lowest bid shall be the lowest bid price on the base contract without consideration of the prices on the additive or deductive items as being used for the purpose of determining the lowest bid prices.)

2. **Additive Bid Items: NOT USED**
3. **Alternate Bids: NOT USED.**
4. Bids shall be awarded subject to availability and approval of Federal, State and/or County funding. The Board of Supervisors of the County of Amador reserves the right to accept or reject any or all bids in whole or in part and/or to waive minor technicalities and/or any irregularities in any bid received if such waiver is in the best interest of the County.
5. Multiple Awards – In addition to other factors, bids will be evaluated on the basis of advantages and disadvantages to Amador County that may result in making more than one award (multiple awards). If an award is made, the County reserves the right to make an award to one or more bidders. Each award shall be made separately based upon the lowest total bid.
6. All bids will become a part of the official files of the County of Amador without obligation on the part of the County.
7. Conformance to bid conditions and specifications.
8. Guarantees and warranties.
9. Qualifications and experience of the Bidder and other key personnel involved in the work.
10. All forms completed and returned, signed in **blue ink**, and filled in properly.
11. The Board of Supervisors reserves the right to construe the Bid according to its true intent where it contains a patent mistake.

COUNTY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

1. County may perform construction or operations related to the Work with its own forces, or 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 of the Contract similar to these (including those portions related to insurance and waiver of subrogation), or have other work performed by utility owners.
2. When separate contracts are awarded for different portions of the Work or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate County/Contractor Contract.

EQUAL LOW BIDS

A tie bid exists when two or more bidders offer products and/or services that meet all specifications, terms and conditions at identical prices, including cash discount offered. In such case, a tie bid will be broken by the following methods, in descending order of preference:

1. Amador County businesses will be given preference. An Amador County business means a business that has its principal place of business located in Amador County;
2. Request best and final costs;
3. By the flip of a coin in the presence of a minimum of three (3) witnesses;

4. Reject bids and re-bid.

ADDENDUM(s)

1. If determined by County, every interpretation of the Bid documents and information regarding changes, additions, or corrections will be answered in the form of an Addendum or Response which will be posted to www.publicpurchase.com, and when issued will be on file at the County of Amador Purchasing Office located at 12200-B Airport Road, Martell, CA, 95654 before Bids are opened. It shall be the Bidder's responsibility to ensure receipt of, and make inquiry as to, any Response and/or Addenda issued. All such Addenda and Responses shall become part of the Bid documents and information and all Bidders shall be bound by such Addenda and Responses whether or not received by the Bidders.
2. Should it be found necessary, the County of Amador General Services Administration Director, or his designee, shall issue a written addendum or respond to questions which will be posted to www.publicpurchase.com. Anyone acquiring "hard copies" from the office of the General Services Administration shall be placed on a "Holders Plan List" and notified of any changes. Addendum(s) issued should be signed and included in your proposal.
3. Bidders should acknowledge all addendums received by completing the Bidder's Acknowledgement Form.

PREVAILING WAGE REQUIREMENTS

1. The successful bidder must comply with California prevailing wage laws (California Labor Code section 1770 *et seq.*), and must pay and require payment of wages according to prevailing wage rates established by the California Department of Industrial Relations for all on-site work to be performed on the Project. Before bidding, all bidders are advised to obtain current prevailing wage documents entitled "Basic Trades or Sub-Trades Rates" as determined by the Director of the California Department of Industrial Relations, available for review at: <http://www.dir.ca.gov/dlsr/PWD/index.htm>, or mail to; Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA 94142-0603, or call (415) 703-4780.
2. The successful bidder will be required to submit certified payroll, statement of compliance and all certified payroll documents as proof of payment of prevailing wages and rates. The County or its authorized representative may monitor wage rates and payment of prevailing wages by interviewing workers on the job site.

SUBCONTRACTOR LISTING

In accordance with the California Public Contract Code section 4100 *et seq.*, every bidder shall in its bid set forth:

1. **The name and location of the place of business, California contractor license number, DIR registration number of each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half (1/2) of one percent (1%) of the bidder's total bid.**
2. The portion of the work that will be done by each subcontractor. If the bidder fails to specify a subcontractor for any portion of the work to be performed under the Contract in excess of one-half (1/2) of one percent (1%) of the bidder's total bid, he agrees to perform that portion himself. The successful bidder shall not, without the consent of the County, either:
 - a. Substitute any person as subcontractor in place of the subcontractor designated in the original bid, except as allowed by section 4107.
 - b. Permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the bid, without the consent of the County.
 - c. Except for change orders, sublet or subcontract any portion of the work in excess of one-half (1/2) of one percent (1%) of the total bid as to which its original bid did not designate a subcontractor.
3. Those submitting bids must complete and use the subcontractor listing form provided herein.

RIGHT TO SUBSTITUTE SECURITIES

Monthly progress payments shall be made to Contractors as provided in the Bid information and documents, less a five percent (5%) retention. Pursuant to Public Contract Code section 22300, at the request and expense of a Contractor, securities equivalent to the amount withheld may be deposited by Contractor with the County, State Treasurer or with a state or federally chartered bank as the escrow agent, who shall release such securities to the Contractor upon satisfactory completion of the Contract.

Alternatively, a Contractor may request, pursuant to Public Contract Code section 22300, that payment of retentions be made directly to the escrow agent. The Contractor shall receive the interest earned on the investments upon the same terms provided for in section 22300 for securities deposited by the Contractor. Upon satisfactory completion of the Contract, the Contractor shall receive from the escrow agent all securities, interest and payments received by the escrow agent from the County.

DISCLAIMER REGARDING NOTIFICATION, ACCESS AND PLAN HOLDERS LIST INFORMATION

1. Bidders obtaining Bid information and documents directly from the Department of General services will be placed on the official plan holders list. In order to be placed on the County's plan holders list, a purchase or receipt of the Bid information and documents from General Services Administration office is required.

2. The County makes plan holders list information available on an “as-is” basis and makes no expressed or implied warranty as to the completeness or accuracy of the information for any particular purpose whatsoever. The County intends to update the information periodically, and it shall be the Receiver’s responsibility to check with the Department of the General Services Administration as required to determine if the information provided is the most up to date information available. Use of this information constitutes the agreement of the Receiver (or any other user) to the foregoing terms and conditions.
3. The County’s web site for posting Bids, RFPs, RFQs, Addendums and responses to questions can be found at www.publicpurchase.com. This site keeps a list of those bidders who were notified and who have accessed information regarding this Bid. Upon request a bidder may request a copy of those notified and/or those who have accessed and downloaded Bid information. The County makes notification and/or access list information available on an “as-is” basis and makes no expressed or implied warranty as to the completeness or accuracy of the information for any particular purpose whatsoever. The web site www.publicpurchase.com is updated periodically, and it shall be the Receiver’s responsibility to check with the Department of the General Services Administration as required to determine if the information provided is the most up to date information available. Use of this information constitutes the agreement of the Receiver (or any other user) to the foregoing terms and conditions.

DISCLAIMER REGARDING PLAN ROOMS AND ELECTRONIC INFORMATION

All Bidders should contact the County to receive copies of current ITB information and documents. Bidders who rely on any web site or any information obtained from plan rooms accept responsibility for any inaccurate or incomplete information. **DISCLAIMER REGARDING ELECTRONIC INFORMATION:** Computer-based and electronic information, including any contact e-mail addresses (“Electronic Information”) for Amador County ITB **(24-01)** is provided solely for the convenience of prospective Bidders, and are not considered part of the ITB information and documents. No representation or warranty is made, either expressed or implied, with regard to the accuracy or suitability of said Electronic Information for any purpose whatsoever. It is the responsibility of prospective Bidders to verify all aspects of the Electronic information against the County’s official hard-copies of the ITB Information and documents. In the event of any conflict between the County’s official hard-copies of the ITB information and documents and the Electronic Information, the official hard-copies of the ITB information and documents shall govern. Utilization or viewing of said Electronic Information, including contact e-mail addresses, shall constitute implicit acknowledgement and acceptance of the provisions of this paragraph.

FILING OF BID PROTESTS

Any Bidder with a direct financial interest adversely affected by any alleged Bid irregularity at the Bid opening may file a protest with the County, where such protest is based on alleged violations of Federal, State, or local law or ordinance, or alleged Bid irregularity. Bidders shall file a “protest” of a Bid with the County’s Purchasing Agent. In order for a Bidder’s protest to be considered valid, the protest must:

1. Be filed in writing within five (5) calendar days after the bid opening date and;
2. Clearly identify the specific irregularity or accusation and;
3. Request a determination of the protest issue and;
4. Specify, in detail, the grounds of the protest and the facts supporting the protest; and
5. Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, it will be rejected as invalid. If the protest is valid, the County's Purchasing Agent, or other designated County staff member, shall review the basis of the protest and all relevant information. The Purchasing Agent will provide a written decision to the protestor. Following notice to protestor, the protestor may then appeal the decision of the Purchasing Agent to the Board of Supervisors within **five (5)** working days of the date of the written decision from the Purchasing Agent. The Board of Supervisors will provide a decision to the protestor's appeal. The decision from the Board of Supervisors is final and no further appeals will be considered.

If the protested procurement involves Federal or State funds, the Purchasing Agent shall give notice to the protesting party that he or she has the right to appeal to the appropriate Federal or State agency which shall be identified by name and address. An appeal hereunder shall be filed with the appropriate agency within **five (5)** working days after of the date of the notification by the Purchasing Agent or his designee which may be by telephone, letter and/or email to the interested party(ies).

BID FORM INSTRUCTIONS AND INFORMATION

1. The bidder shall set forth for each item of work, in clearly legible figures, a unit price or lump sum price and a total in the respective spaces provided for this purpose. The amount set forth under the Total Bid Amount space shall be the total for the Bid.
2. Bidders may submit only one Bid for the work, which is all-inclusive and includes all work in accordance with the Bid information and documents, for the furnishing of all labor, tax, transportation, services, disposal, equipment, materials, and appurtenant facilities to provide **Buena Vista Landfill Improvements in Amador County**. The bidder shall set forth a Total Bid Amount as set forth in the Bid Form **(24-01)**.
3. The amount of the bid will be the total of those extended lump sum and unit price costs for each item.
4. In case of discrepancy between the unit price and the total item cost set forth in the total bid column, the unit cost shall prevail, except as provided in (a) as follows:
 - (a). If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount entered in the total bid amount column for the item, then the amount set forth in the total bid amount column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price.
5. Unit Prices shall include all labor, materials, tools, and equipment; all other direct and indirect costs necessary to complete the unit price component of the Work and to coordinate the Unit Price work with adjacent work, and shall include all overhead and profit. Contractor shall accept compensation computed in accordance with the Unit Prices as full compensation for furnishing such work; including any increases or decreases by change order as directed by the Project Manager.
6. Contractor shall immediately notify Project Manager when conditions require the use of Unit Price items of work. The applicability of, measurement methods for, documentation of, and final adjustment of the Contract Price for Unit Price items of work shall be determined by the Project Manager. After performing Unit Price items of work as directed

by the Project Manager, Contractor shall take necessary measurements in the presence of the Project Manager (unless waived by the Project Manager), and shall submit calculations of quantities to the Project Manager for approval. Contractor shall notify the Project Manager one day in advance of taking measurements.

7. Should the Contract Price is based upon estimated quantities for unit price work set forth in the Invitation to Bid. The Contract Price will be adjusted by change order for any increases or decreases in quantities used for unit price work.
8. Each Bid submitted shall be the bidder's price for the furnishing of all labor, tax, bonds, premiums, transportation, services, disposal, equipment, materials, and appurtenant facilities to complete the work in accordance with all of the Bid Information and Documents.
9. The bid form shall be submitted based on the most current prevailing wage rates and said wage rates shall be included in the Total Bid Amount as set forth in the Bid Form.
10. The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the *COUNTY OF AMADOR*, and that discretion will be exercised in the manner deemed by the *COUNTY OF AMADOR* to best protect the public interest in the prompt and economical completion of the work. The decision of the *COUNTY OF AMADOR* respecting the amount of a bid, or the existence or treatment of an irregularity in a bid, shall be final.
11. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the State of Incorporation and by the signature of an officer acting in the corporate name, with corporate seal affixed. The names of the corporation President, Secretary, Treasurer, and Manager must be listed.
12. The undersigned, as bidder, declares that the only persons or parties interested in this bid as principals are those named herein; that this bid is made without collusion with any other person, firm, or corporation; that he has carefully examined the location of the proposed work, the annexed proposed form of contract, and the drawings therein referred to; and he proposes, and agrees if this bid is accepted, that he will contract with the County of Amador, in the form of the copy of the contract annexed hereto, to 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 of the Bid information and documents as therein set forth, and that bidder will take in full payment therefor the following prices place upon the Bid Form.

SPECIAL PROVISIONS

1. **Certifications and Disclosures required by Federal funding requirements are included in attachment "A"**

BID PROPOSAL FORM
BID No. (24-01)
Buena Vista Landfill Improvements

I, the undersigned, agree to and declares that he/she has carefully examined the Contract Documents and hereby proposes and agrees to furnish any and all required labor, tax, bonds, insurance, permits, premiums, shipping, transportation, services, disposal, equipment, materials, appurtenant facilities, and work required to complete **Buena Vista Landfill Improvements** in Amador County, as described in this bid, at the pricing quoted below:

Item	Description	Quantity	Units	Unit Cost	Bid Amount
Schedule 1 – Phase I Final Cover Reconstruction					
A1	Contractor Equipment & Personnel Mobilization / Demobilization	1	LS		
A2	Layout of Work and Surveys	1	LS		
A3	Clear and Strip Existing Final Cover	15.9	Acres		
A4	Existing Final Cover Excavation	98,931	CY		
A5	2-Foot Compacted Foundation Layer	55,100	CY		
A6	1-Foot Compacted Low-Permeability Soil	27,441	CY		
A7	1.5-Foot Vegetative Soil Layer	37,419	CY		
A8	Drainage Channel Lining	11,936	SF		
A9	MW-13 Diversion Channel	1	LS		
A10	Regrade and Seed On-Site Borrow Source	54,361	SY		
A11	Material Storage Yard Base Surface	285	CY		
A12	8" Diameter SDR17 HDPE Pipe	900	LF		

Item	Description	Quantity	Units	Unit Cost	Bid Amount
A13	6" Diameter SDR17 HDPE Pipe	1735	LF		
A14	4" Diameter SDR17 HDPE Pipe	1745	LF		
A15	4" Diameter SDR11 HDPE Pipe – Above Ground	2045	LF		
A16	2" Diameter SDR11 HDPE Pipe – Above Ground	1160	LF		
A17	2" Diameter SDR9 HDPE Pipe	2440	LF		
A18	1" Diameter SDR9 HDPE Pipe	395	LF		
Schedule 2 – Class II Surface Impoundment Expansion					
B1	General Compacted Earth Fill	3,575	CY		
B2	Geomembrane Anchor Trench	1,145	LF		
B3	HDPE Geomembrane	75,600	SF		
B4	Non-Woven Geotextile	9,000	SF		
B5	Electrical Leak Location Survey 16 Gauge Wire	14,500	LF		
B6	Composite Geonet	75,600	SF		
B7	Leak Detection Sump	1	LS		
B8	Electrical Service Conduit and Wire	1,165	LF		
B9	Electrical Service Panel	1	LS		
B10	Security Chain-Link Fence	1,065	LF		
B11	Security Chain-Link	5	EA		

Item	Description	Quantity	Units	Unit Cost	Bid Amount
B12	Fence Gates	5	EA		
B13	Ultra Block Retaining Wall 2.5'x2.5'x2.5'	1	LS		
B14	Ultra Block Retaining Walls 2.5'x2.5'x5.0'	1	LS		
B15	Ultra Block Retaining Walls 2.5'x2.5'x7.5'	1	LS		
B16	Ultra Block Retaining Walls 2.5'x2.5'x10.0'	1	LS		
B17	Ecomister Concrete Pads	2	EA		

Base Bid - Schedule 1 – Phase I Final Cover Reconstruction	Bid Amount
	\$
Base Bid - Schedule 2 – Class II Surface Impoundment Expansion	Bid Amount
	\$
TOTAL BID AMOUNT “Guaranteed Maximum Price”	\$

\$ _____
 Handwritten in words **Schedule 1 Base Bid Amount (only)**

\$ _____
 Handwritten in words **Schedule 2 Base Bid Amount (only)**

\$ _____
 Handwritten in words **Total Bid Amount**

 Company Name Telephone

 Address Fax

 City, State, Zip Email address

 Bidder's Name Title

 Bidder's Signature Date

BIDDER’S ACKNOWLEDGMENT FORM

If the bidder is an individual, his/her signature shall be placed below. If the bidder is a partnership, corporation, or joint venture, the true name of the firm shall be set forth above together with the signature of the person or persons authorized to sign contracts on behalf of the entity.

The person or persons executing this Bid on behalf of a partnership, corporation or joint venture shall be prepared to demonstrate by resolution or other authorization satisfactory to the County that such person is or that such persons are authorized to act for the entity with respect to submission of the bid.

If the signature is by an agent other than an officer of a corporation, partner of a partnership, or partner of a joint venture, a Power of Attorney shall be submitted with the bid; otherwise, the bid may be disregarded as irregular and unauthorized.

The bidder’s execution on the signature portion of this Bid shall constitute an endorsement and execution of those certifications that are part of this Bid.

BIDDER

_____ Date

Bidder's name

By _____
Authorized Representative

ADDENDUM ACKNOWLEDGMENT

Any addenda issued during the time of bidding shall form a part of the Bid Information and Documents issued to bidders for the preparation of their proposals and shall constitute a part of the Bid Information and Documents.

Bidder acknowledges receipt of the following addenda issued by County:

Addendum No. _____, dated _____.

Addendum No. _____, dated _____.

Addendum No. _____, dated _____.

Addendum No. _____, dated _____.

Addendum No. _____, dated _____.

Addendum No. _____, dated _____.

NOTE: Failure to acknowledge receipt of addenda on this form could disqualify your Bid.

Name of Bidder: _____

Business

Address:

REFERENCE FORM

Bidder shall provide information about its (3) most recently completed Public Works project. Names and references must be current and verifiable. Use separate copies of this form for each project.

Project Name_____

Location_____

Owner_____

Owner Contact (name and current phone number)_____

Architect or Engineer_____

Architect or Engineer Contact (name and current phone number)_____

Construction Manager (name and current phone number)_____

Description of Project, Scope of Work Performed:_____

Total Value of the base bid Construction_____

Total number of change orders_____ **Total value of change orders \$**_____

Original Schedule Completion Date_____

Total number of Time Extensions Granted_____ **Total number of days**_____

Actual Date of Completion_____

CONTACT INFORMATION FORM

Firm Name: _____ **Check One:** **Corporation**
(as it appears on license) **Partnership**
 Sole Prop.
 Joint Venture

Contact Person: _____

Address: _____

Phone: _____ **Fax:** _____

E-mail Address: _____

If firm is a sole proprietor, partnership or joint venture:

Owner(s) of Company: _____

Contractor's License number(s) _____

GUARANTY

The undersigned guarantees to the County of Amador the construction and installation work for:

Project: **Buena Vista Landfill Improvements**

Should any of the materials or equipment prove defective or should the work as a whole prove defective, due to faulty workmanship, materials furnished, or methods of installation, or should the work of any part thereof fail to operate properly as originally intended and in accordance with the Drawings and Specifications, due to any of the above causes, all within twelve (12) months after the date on which this project is accepted by the County, the undersigned agrees to reimburse the County, upon demand, for its expenses incurred in restoring said work to the condition contemplated in said project, including the cost of any such equipment or materials replaced and the cost of removing and replacing any other work necessary to make such replacement or repairs, or, upon demand by the County, to replace any such material and to repair said work completely without cost to the County, so that said work will function successfully as originally contemplated.

In the event the County elects to have said work performed by the undersigned, the undersigned agrees that the repairs shall be furnished and installed within a reasonable time after the receipt of the demand from the County.

If the undersigned shall fail or refuse to comply with his/her obligations under this Guaranty, the County shall be entitled to all costs and expenses, including attorney's fees, reasonably incurred by reason of the said failure or refusal.

Print Name

Date

Contractor's Signature

Bidder shall execute the Guaranty on this page at the time of submitting his/her Bid.

SUBCONTRACTOR LISTING

Pursuant to the provision of Section 4100 to 4113, inclusive, of the Public Contract Code of the State of California, every Bidder shall set forth the name and location of the place of business of each subcontractor who will perform work or labor in or about the construction of the work or improvement in an amount in excess of one-half (1/2) of one percent (1%) of the Bidder's total bid. If the Bidder fails to specify a subcontractor for any portion of the work in excess of one-half (1/2) of one percent (1%) of the Bidder's total bid, he/she agrees to perform that portion of the work or improvement.

Type of Work	Name & Address of Subcontractor	License No. & DIR No.	License Type

NOTICE: The County reserves the right to approve/disapprove use of individual Subcontractors on this project. No substitutions or additions of Subcontractors may be made without prior written approval of the County and Project Manager(s).

CERTIFICATION-MINIMUM WAGE RATES

Bidder has read and certifies that he/she is aware of the amounts of said minimum wages as set forth by the Director of the Department of Industrial Relations, State of California, and the United States Department of Labor, and that he/she will insure that all workers employed for the Project, either by him/her or by Subcontracts, are paid not less than the higher wage rate for all work done on or connected with this Project.

Name

Title

Contractor

Address

 ***Sign Here***

Signature of Bidder

Date

BIDDER'S DECLARATION

The undersigned, _____, declares as follows:

- 1. The bidder will perform the work under the Contract without discrimination, and shall not discriminate against any employee or applicant for employment, on the basis of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, or sexual orientation. The bidder shall comply with Labor Code Section 1735 and all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and all rules, regulations and relevant orders of the President's Committee on Equal Opportunity. The bidder shall also comply with the California Fair Employment and Housing Act (Government Code, Section 12900 and following).
- 2. The bidder has not been convicted within the preceding three years of any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or federal antitrust law in connection with the bidding upon, award of, or performance of, any public work contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof.
- 3. The names and capacities of all persons interested in the foregoing bid as principals are as follows:
(State legal name of the entity as well as the names of the president, secretary, treasurer, and manager if a corporation; the names of all individual partners or joint venturers if a partnership or joint venture; or the first and last names of the owner of a sole proprietorship.)

- 4. The only persons or parties interested in this bid as principals are those named in paragraph three above. This bid is made without collusion with any other person, firm, or corporation. To the best of my knowledge and belief, no elected/appointed official or employee of the County of Amador is financially interested, directly or indirectly, in the offer of services specified in this bid
- 5. The bidder is licensed in accordance with the California Contractors' State License law to perform the work for which the bid is submitted. The bidder's license number is: _____. The expiration date of the license is _____.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this Bidder's Declaration was executed on _____, **2024** in (location) _____.

Signature

Title: _____

Name of Bidder: _____

Address of Bidder: _____

NOTE: *If Bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the corporation. If Bidder is a partnership or joint venture, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign Contracts on behalf of the partnership or joint venture. If Bidder is an individual, his signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership or joint venture, a Power of Attorney must be on file with the Department and must be submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.*

**PUBLIC CONTRACT CODE SECTION 7106
NONCOLLUSION AFFIDAVIT**

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)
(To Be Executed By Bidder and Submitted With Bid)

To the County of Amador.

The undersigned declares:

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

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

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ 2024 at _____ (city), _____ (state).

(Signature)

**DECLARATION REGARDING
DISQUALIFICATION, REMOVAL OR PREVENTION FROM BIDDING**

Name of Bidder: _____

1. Has the bidder ever been disqualified, removed, or otherwise prevented from bidding on or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes No

If your answer is "Yes," please explain the circumstances on a separate sheet of paper and attach it to your bid.

2. Has any officer of the bidder ever been disqualified, removed, or otherwise prevented from bidding on or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes No

If your answer is "Yes," please explain the circumstances on a separate sheet of paper and attach it to your bid.

3. Has any employee of the bidder ever been disqualified, removed, or otherwise prevented from bidding on or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes No

If your answer is "Yes," please explain the circumstances on a separate sheet of paper and attach it to your bid.

4. Printed name of person authorized to execute this declaration on behalf of bidder: _____

Title: _____

Executed on _____, 2024, in _____, California.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am authorized to execute this Declaration on behalf of the bidder named above.

signature

PUBLIC CONTRACT CODE 10232 STATEMENT

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement and Questionnaire. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Contractor's Printed name	Contractors' Signature	Date
---------------------------	------------------------	------

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire: Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

Contractor's Printed name	Contractors' Signature	Date
---------------------------	------------------------	------

CERTIFICATIONS AND DISCLOSURES (Federal CWSRF Funding)

- Equal Employment Opportunity Certification
- CWSRF DBE Requirements and Documentation
- Exhibit 12-B: Bidder's List of Subcontractor (DBE and Non-DBE)
- Exhibit 15-G: Construction Contract DBE Commitment
- Exhibit 15-H: Proposer/Contractor Good Faith Efforts (if DBE Goal not met)
- BABA (Buy American Build American Provisions - Public Law 117-58
- Davis Bacon Compliance – Requirements for CWSRF Projects
- Lobbying Disclosure

The Prime Contractor must submit at the time of bid. Listed Subcontractors must submit no later than 4 p.m. on the 4th business day after bid opening.

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The bidder _____,
proposed subcontractor _____, hereby
certifies that he has _____, has not _____, participated in a previous contract or subcontract subject to the
equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that,
where required, he has filed with the Joint Reporting Committee, the Director of the Office of
Federal Contract Compliance, a Federal Government contracting or administering agency, or the
former President's Committee on Equal Employment Opportunity, all reports due under the
applicable filing requirements.

*Note: The above certification is required by the Equal Employment Opportunity Regulations of
the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed
subcontractors only in connection with contracts and subcontracts which are subject to the equal
opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity
clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or
under are exempt.)*

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or
their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or
subcontract subject to the Executive Orders and have not filed the required reports should note
that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such
contractor submits a report covering the delinquent period or such other period specified by the
Federal Highway Administration or by the Director, Office of Federal Contract Compliance,
U.S. Department of Labor.



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

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

How to Achieve the Purpose of the Program

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

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

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

Disadvantaged Business Enterprises are:

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

Certifying DBE Firms:

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

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

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

Six Good Faith Efforts (GFE)

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

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

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

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

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

1. If the apparent successful low bidder was rejected, a complete explanation must be provided.
2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.
3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

Administration Requirements

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

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

Reporting Requirements

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

CONTACT FOR MORE INFORMATION

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

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

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**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form**

A Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE¹ subcontractor² the opportunity to describe work received and/or report any concerns regarding the funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DBE Coordinator at any time during the project period of performance.

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

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

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

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

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

Subcontractor Signature	Print Name
Title	Date

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

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

FORM 4500-2 (DBE Subcontractor Participation Form)



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

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

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

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

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

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

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

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

FORM 4500-3 (DBE Subcontractor Performance Form)



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE¹ subcontractor's² and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

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

I have identified potential DBE certified subcontractors. YES NO

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

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

--Continue on back if needed--

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

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

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

Prime Contractor Signature	Print Name
Title	Date

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

FORM 4500-4 (DBE Subcontractor Utilization Form)



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

1. Grant/Finance Agreement Number:		2. Annual Reporting Period 10/1/___ through 09/30/___		3. Purchase Period of Financing Agreement:	
4. Total Payments Paid to Prime Contractor or Sub-Contractors During Current Reporting Period: \$					
5. Recipient's Name and Address:				6. Recipient's Contact Person and Phone Number:	
7. List All DBE Payments Paid by Recipient or Prime Contractor During Current Reporting Period:					
Payment or Purchase Paid by Recipient or Prime Contractor	Amount Paid to Any DBE Contractor or Sub-Contractor For Service Provided to Recipient		Date of Payment (MM/DD/YY)	Procurement Type Code** (see below)	Name and Address of DBE Contractor of Sub-Contractor or Vendor
	MBE	WBE			
8. Initial here if no DBE contractors or sub-contractors paid during current reporting period:					
9. Initial here if all procurements for this contract are completed:					
10. Comments:					
11. Signature and Title of Recipient's Authorized Representative				12. Date	

Email Form UR-334 to:

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

Questions may be directed to:

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

****Procurement Type:**

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

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

INSTRUCTIONS FOR COMPLETING FORM UR-334

- Box 1** Grant or Financing Agreement Number.
- Box 2** Annual reporting period.
- Box 3** Enter the dates between which you made procurements under this financing agreement or grant.
- Box 4** Enter the total amount of payments paid to the contractor or sub-contractors during this reporting period.
- Box 5** Enter Recipient's Name and Address.
- Box 6** Enter Recipient's Contact Name and Phone Number.
- Box 7** Enter details for the DBE purchases only and be sure to limit them to the current period.
1) Use either an "R" or a "C" to represent "Recipient" or "Contractor." 2) Enter a dollar total for DBE and total the two columns at the bottom of the section. 3) Provide the payment date. 4) Enter a product type choice from those at the bottom of the page. 5) List the vendor name and address in the right-hand column
- Box 8** Initial here if no DBE contractors or sub-contractors were paid during this reporting period.
- Box 9** Initial this box only if all purchases under this financing agreement or grant have been completed during this reporting period or a previous period. If you initial this box, we will no longer send you a survey.
- Box 10** This box is for explanatory information or questions.
- Box 11** Provide an authorized representative signature.
- Box 12** Enter the date form completed.

Exhibit 12-B: Bidder's List of Subcontractor (DBE and Non-DBE) - Part 1

As of March 1, 2015 Contractors (and sub-contractors) wishing to bid on public works contracts must be registered with the State Division of Industrial Relations and certified to bid on Public Works contracts. Please register at <https://www.dir.ca.gov/Public-Works/Contractor-Registration.html>. The local agency will verify registration of all contractors and subcontractors on public works projects at bid and thereafter annually to assure that yearly registration is maintained throughout the life of the project.

In accordance with Title 49, Section 26.11 of the Code of Federal Regulations, and Section 4104 of the Public Contract Code of the State of California, as amended, the following information is required for each sub-contractor who will perform work amounting to more than one half of one percent (0.5%) of the Total Base Bid or \$10,000 (whichever is greater).

FEDERAL PROJECT NUMBER: _____

Photocopy this form for additional firms.

Subcontractor Name & Location	Line Item & Description	Subcontract Amount	Percentage of Bid Item Subcontracted	Contractor License Number	DBE (Y/N)	DBE Cert Number	Annual Gross Receipts
				DIR Reg Number			
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years

Exhibit 12-B: Bidder's List of Subcontractor (DBE and Non-DBE) - Part 2

In accordance with Title 49, Section 26 of the Code of Federal Regulations, the Bidder shall list all subcontractors who provided a quote or bid but **were not selected** to participate as a subcontractor on this project.

FEDERAL PROJECT NUMBER: _____

Photocopy this form for additional firms.

Subcontractor Name & Location	Line Item & Description	Subcontract Amount	Percentage of Bid Item Subcontracted	Contractor License Number	DBE (Y/N)	DBE Cert Number	Annual Gross Receipts
				DIR Reg Number			
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years
NAME							< \$1 million
							< \$5 million
							< \$10 million
City, State							< \$15 million
							Age of Firm in years

Distribution – Original: Local Agency File; Copy: DLAE w/Award Package

Exhibit 15-G: Construction Contract DBE Commitment

1. Local Agency: Amador County 2. Contract DBE Goal: 15%
 3. Project Description: Buena Vista Landfill Improvements WMU-1 Phase 1 Final Cover Reconstruction and Class 2 Surface
 4. Project Location: Buena Vista Landfill 6500 Buena Vista Rd Ione, CA
 5. Bidder's Name: _____ 6. Prime Certified DBE: 7. Bid Amount: _____
 8. Total Dollar Amount for **ALL** Subcontractors: _____ 9. Total Number of **ALL** Subcontractors: _____

10. Bid Item Number	11. Description of Work, Service, or Materials Supplied	12. NAICS or Work Category Codes	13. DBE Certification Number	14. DBE Contact Information (Must be certified on the date bids are opened)	15. DBE Dollar Amount

Local Agency to Complete this Section upon Execution of Award		16. TOTAL CLAIMED DBE PARTICIPATION	
22. Local Agency Contract Number:	_____		\$ 0.00
23. Federal-Aid Project Number:	_____		0.00 %
24. Bid Opening Date:	_____		
25. Contract Award Date:	_____		
26. Award Amount:	_____	IMPORTANT: Identify all DBE firms being claimed for credit, regardless of tier. Names of the First Tier DBE Subcontractors and their respective item(s) of work listed above must be consistent, where applicable with the names and items of the work in the "Subcontractor List" submitted with your bid. Written confirmation of each listed DBE is required.	
Local Agency certifies that all DBE certifications are valid and information on this form is complete and accurate.			
27. Local Agency Representative's Signature	_____	28. Date	_____
29. Local Agency Representative's Name	_____	30. Phone	_____
31. Local Agency Representative's Title	_____		
		17. Preparer's Signature	_____
		18. Date	_____
		19. Preparer's Name	_____
		20. Phone	_____
		21. Preparer's Title	_____

DISTRIBUTION: 1. Original – Local Agency
 2. Copy – Caltrans District Local Assistance Engineer (DLAE). Failure to submit to DLAE within 30 days of contract execution may result in de-obligation of federal funds on contract.
 3. Include additional copy with award package.

INSTRUCTIONS – CONSTRUCTION CONTRACT DBE COMMITMENT**CONTRACTOR SECTION**

1. **Local Agency** - Enter the name of the local agency that is administering the contract.
2. **Contract DBE Goal** - Enter the contract DBE goal percentage as it appears on the project advertisement.
3. **Project Description** - Enter the project description as it appears on the project advertisement (Bridge Rehab, Seismic Rehab, Overlay, Widening, etc).
4. **Project Location** - Enter the project location(s) as it appears on the project advertisement.
5. **Bidder's Name** - Enter the contractor's firm name.
6. **Prime Certified DBE** - Check box if prime contractor is a certified DBE.
7. **Bid Amount** - Enter the total contract bid dollar amount for the prime contractor.
8. **Total Dollar Amount for ALL Subcontractors** – Enter the total dollar amount for all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
9. **Total number of ALL subcontractors** – Enter the total number of all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
10. **Bid Item Number** - Enter bid item number for work, services, or materials supplied to be provided.
11. **Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials to be provided. Indicate all work to be performed by DBEs including work performed by the prime contractor's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
12. **NAICS or Work Category Codes** - Enter NAICS or Work Category Codes from the California Unified Certification Program database.
13. **DBE Certification Number** - Enter the DBE's Certification Identification Number. All DBEs must be certified on the date bids are opened.
14. **DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors. Also, enter the prime contractor's name and phone number, if the prime is a DBE.
15. **DBE Dollar Amount** - Enter the subcontracted dollar amount of the work to be performed or service to be provided. Include the prime contractor if the prime is a DBE. See LAPM Chapter 9 for how to count full/partial participation.
16. **Total Claimed DBE Participation** - \$: Enter the total dollar amounts entered in the "DBE Dollar Amount" column. %: Enter the total DBE participation claimed ("Total Claimed DBE Participation Dollars" divided by item "Bid Amount"). If the total % claimed is less than item "Contract DBE Goal," an adequately documented Good Faith Effort (GFE) is required (see Exhibit 15-H DBE Information - Good Faith Efforts of the LAPM).
17. **Preparer's Signature** - The person completing the DBE commitment form on behalf of the contractor's firm must sign their name.
18. **Date** - Enter the date the DBE commitment form is signed by the contractor's preparer.
19. **Preparer's Name** - Enter the name of the person preparing and signing the contractor's DBE commitment form.
20. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
21. **Preparer's Title** - Enter the position/title of the person signing the contractor's DBE commitment form.

LOCAL AGENCY SECTION

22. **Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
23. **Federal-Aid Project Number** - Enter the Federal-Aid Project Number(s).
24. **Bid Opening Date** - Enter the date contract bids were opened.
25. **Contract Award Date** - Enter the date the contract was executed.
26. **Award Amount** – Enter the contract award amount as stated in the executed contract.
27. **Local Agency Representative's Signature** - The person completing this section of the form for the Local Agency must sign their name to certify that the information in this and the Contractor Section of this form is complete and accurate.
28. **Date** - Enter the date the DBE commitment form is signed by the Local Agency Representative.
29. **Local Agency Representative's Name** - Enter the name of the Local Agency Representative certifying the contractor's DBE commitment form.
30. **Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
31. **Local Agency Representative Title** - Enter the position/title of the Local Agency Representative certifying the contractor's DBE commitment form.

EXHIBIT 15-H: PROPOSER/CONTRACTOR GOOD FAITH EFFORTS

Cost Proposal Due Date _____ PE/CE

Federal-aid Project No(s). _____ Bid Opening Date _____ CON

The County of Amador established a Disadvantaged Business Enterprise (DBE) goal of 0.00% for this contract. The information provided herein shows the required good faith efforts to meet or exceed the DBE contract goal.

Proposers or bidders submit the following information to document their good faith efforts within five (5) calendar days from cost proposal due date or bid opening. Proposers and bidders are recommended to submit the following information even if the Exhibit 10-O1: Consultant Proposal DBE Commitments or Exhibit 15-G: Construction Contract DBE Commitment indicate that the proposer or bidder has met the DBE goal. This form protects the proposer's or bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions, **please attach additional sheets as needed:**

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

C. The items of work made available to DBE firms including those unbundled contract work items into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation in order to meet or exceed the DBE contract goal.

Items of Work	Proposer or Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount (\$)	Percentage Of Contract
	Pick			0.00%
	Pick			0.00%
	Pick			0.00%
	Pick			0.00%

D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

Names, addresses and phone numbers of firms selected for the work above:

E. Efforts (e.g. in advertisements and solicitations) made to assist interested DBEs in obtaining information related to the plans, specifications and requirements for the work which was provided to DBEs:

F. Efforts (e.g. in advertisements and solicitations) made to assist interested DBEs in obtaining bonding, lines of credit or insurance, necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

H. Any additional data to support a demonstration of good faith efforts:

BUILD AMERICA, BUY AMERICA (BABA) REQUIREMENTS

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

Sample Certification for BABA

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

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Certification for Project (XXXXXXXXXX)

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

Item, Products and/or Materials:

- 1. Xxx
- 2. Xxx
- 3. Xxx

Such process took place at the following location:

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

Signed by company representative

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

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Step Certification for Project (XXXXXXXXXX)

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

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

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

One of the following certification forms should be used as documentation of compliance with the AIS requirements.

Sample Certification for AIS

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

Date

Company Name

Company Address

City, State Zip

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

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

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

Sample Step Certification for AIS

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

Date

Company Name

Company Address

City, State Zip

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

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

Item, Products and/or Materials:

- 1. Xxx
- 2. Xxx
- 3. Xxx

Such process took place at the following location:

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

Signed by company representative

American Iron and Steel (AIS) Requirement

What You Need To Know For State Revolving Fund (SRF) Projects

Iron and Steel Products Include:

Lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel*, reinforced precast concrete, and construction materials**.

*Structural steel is defined as rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in construction of buildings.

**Construction materials are defined as articles, materials, or supplies (such as, but not limited to, rebar, fasteners, framing joists, railings, doors, etc), not including mechanical and/or electrical components, equipment, and systems.

Does My Product Have to Comply with AIS?

1. Is the product a listed product? (See box to the left)
2. Is the product made of primarily iron or steel? (primarily means products greater than 50% iron or steel, measured by material costs only)
3. Is the product permanently incorporated into the project?

If the answers to these three questions are all "yes," then this is an iron and steel product under the AIS requirement, and the product must be produced in the U.S. or otherwise be covered by a waiver.

Definition of "Produced in the U.S."

Produced in the U.S. means that all manufacturing processes must occur in the U.S. Manufacturing processes includes processes such as **melting, refining, forming, rolling, drawing, finishing, and fabricating**. Further, if a domestic iron and steel product is taken out of the U.S. for any part of the manufacturing process, it becomes foreign source material.

Important Note About Other Domestic Preference Requirements:

It is important to understand that the AIS requirement is different than other domestic preference requirements. The AIS requirement is not the same as Buy American, Made in USA, Buy America Act, or any state domestic preference requirements. A product may be compliant with these other requirements, but it must also comply specifically with the AIS requirement. The United States Department of Agriculture's (USDA) Rural Utilities Service Water and Environmental Programs also have an AIS requirement as of May 5, 2017, so a reference to the USDA AIS requirement in certification letters is acceptable as well for SRF projects, since the USDA AIS requirement is the same as the SRF AIS requirement.

Methods of Compliance with the AIS Requirement

There are two methods of compliance for SRF projects: **Certification Letters** and **Waivers**.

Certification Letters

A certification letter asserts that all manufacturing processes for the purchased product(s) occurred in the U.S. Additionally, each certification letter includes the 5 elements listed below.

1. **Delivery Jurisdiction:** Letter should include the name of the project and/or jurisdiction where the product was delivered.
2. **Product:** Letter should list the specific product(s) delivered to project site.
3. **Manufacturer Location:** Letter should include the location(s) of the foundry/mill/factory where the product was manufactured (City and State).
4. **Signature of Company Representatives:** On company letterhead.
5. **Reference to AIS Requirement:** Especially if the letter references other domestic preference laws.

Waivers

The AIS statute language permits the EPA to issue waivers for a case or category of cases where the EPA finds:

1. Applying this AIS requirement would be inconsistent with the public interest;
2. Iron and steel products are not produced in the U.S. in sufficient and reasonably available quantities and well as of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the U.S. will increase the cost of the overall project by more than 25 percent.

Project-Specific Waivers

Waiver requests should be submitted via state SRF programs. States should then submit waiver requests to EPA at DWSRFWaiver@epa.gov or CWSRFWaiver@epa.gov.

National De Minimis Waiver

- Allows an SRF project to use a small percentage of incidental products of unknown or non-domestic origin
- Up to **5%** of total project material cost
- Up to **1%** of total project material cost for any single item

AIS De Minimis List Example

Total Materials Cost for Project		\$ 185,000		
Product	Amount	Cost	Total Cost	% of Total Materials Cost
Galvanized Conduit Strap	20	\$ 1.00	\$ 20.00	0.011%
Galvanized Screws	40	\$ 0.05	\$ 2.00	0.001%
4" Stainless Steel Tee	2	\$ 75.00	\$150.00	0.081%
		Total	\$ 172.00	0.093%

Davis-Bacon Requirements for CWSRF Projects

For purposes of this Exhibit only, "subrecipient" or "sub recipient" means the Recipient as defined in this Agreement.

For purposes of this Exhibit only, "recipient" or "State recipient" means the State Water Board.

I. Requirements Under The Water Resources Reform and Development Act of 2014 (WRRDA) For Sub recipients That Are Governmental Entities:

If a sub recipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State Water Board at DavisBacon@waterboards.ca.gov or phone (916) 327-7323. The recipient or sub recipient may also obtain additional guidance from DOL's web site at <http://www.dol.gov/whd/>.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

Under the Water Resources Reform and Development Act of 2014 (WRRDA), DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving. If a sub recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the sub recipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Sub recipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes, or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the sub recipient shall monitor <https://beta.sam.gov/> weekly to ensure that the wage determination contained in the solicitation remains current. The sub recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the sub recipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the sub recipient.
- (ii) If the sub recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective

unless the State recipient, at the request of the sub recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The sub recipient shall monitor <https://beta.sam.gov/> on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the sub recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the sub recipient shall insert the appropriate DOL wage determination from <https://beta.sam.gov/> into the ordering instrument.

(c) Sub recipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a sub recipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the sub recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the sub recipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The sub recipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the sub recipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF - financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or -FY 2014 Water Resource Reform and Development Act, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any

contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification

request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The sub recipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site.

The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice

in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or sub contractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any

trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub recipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(3), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Sub recipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the sub recipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The sub recipient shall periodically review contractors and subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in conformance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

**INSTRUCTIONS FOR COMPLETION OF
SF-LLL, DISCLOSURE OF LOBBYING
ACTIVITIES**

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in Item 4 checks "Subawardee" then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant. or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influenced the covered Federal action.
(b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made

- (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box. Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
 13. Check the appropriate box. Check all boxes that apply. If other, specify nature.
 14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
 15. Check whether or not a continuation sheet(s) is attached.
 16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project.

CONSTRUCTION CONTRACT

CONSTRUCTION CONTRACT
(Major)

THIS CONSTRUCTION CONTRACT (this "Contract") is made this _____ day of _____, 2024, by and between _____ ("Contractor"), whose place of business is at _____, and the County of Amador, a political subdivision of the State of California (the "County").

WHEREAS, County awarded to Contractor the following contract:

Bid No.: 24-01
Job Title: Amador County Buena Vista Landfill Phase 1 Final Cover
Reconstruction & Class II Surface Impoundment Expansion and
Liner Replacement

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

Article I. The Work

Contractor shall provide, furnish and perform all necessary permitting and support services, construction, clean-up, and all other building services of any type, provide and furnish all necessary supplies, materials and equipment (except those to be provided by the County, if any) and all necessary supervision, labor, and services required for the complete construction and all necessary installation, start-up and testing required for the Amador County Buena Vista Landfill Phase 1 Final Cover Reconstruction & Class II Surface Impoundment Expansion and Liner Replacement, as more particularly described in the Contract Documents (hereinafter, the all-inclusive obligations of Contractor set forth in this sentence shall be referred to as the "Work").

Article II. Contract Time

- 2.1 Contractor shall begin the Work within 15 (Fifteen) working days after receipt of a Notice to Proceed from County's Project Manager, and shall diligently prosecute the Work to completion in strict accordance with the Contract Documents.
- 2.2 Contractor shall carry out the Work at all times with the greatest possible dispatch and complete the entire Work under this Contract within 147 (One Hundred Forty-Seven) working days (the "Completion Date").
- 2.3 The County and Contractor recognize that time is of the essence of this Contract and that County will suffer financial loss in the form of lost revenues, contract administration expenses, and other expenses if the Work is not completed within the time specified in paragraph 2.2 above, plus any extensions allowed in accordance with the Contract Documents. Consistent with Paragraph 1.15 of the General Conditions, Contractor and the County agree that because of the nature of the Work, it would be impractical or extremely difficult to fix the amount of actual damages incurred by the County because of a delay in completion of the Work.

Accordingly, the County and Contractor agree that Contractor shall pay the County the following liquidated damages measures that apply separately and cumulatively:

- (a) Contractor shall pay County \$1,000 (One Thousand Dollars) for each calendar day that expires after the time specified in Paragraph 2.1 hereof for Substantial Completion until the Work is Substantially Complete; and
- (b) Contractor shall pay County \$250 (Two Hundred Fifty Dollars) for each calendar day that expires after the time specified in Paragraph 2.1 hereof for Final Completion until the Work is Finally Complete. This measure of liquidated damages shall be presumed to be, except as provided below, the damages suffered by the County resulting from delay in completion of the Project. County shall not release retention until Contractor achieves Substantial Completion.

2.4 Liquidated damages for delay shall only cover and be in lieu of the actual damages suffered by the County as a result of delay referenced above. Liquidated damages shall not cover the cost of completion of the Work, damages resulting from defective work, cost of temporary replacement facilities, damages suffered by others who then seek to recover their damages from the County (for example, delay claims of other contractors or subcontractors), and defense costs thereof.

Article III. Contract Price

- 3.1 County shall pay Contractor for performance of the Work the maximum lump sum of **Dollars and no Cents (\$_____.****00)**, subject to additions and deductions as provided in this Contract. Such fixed lump sum is referred to as “Guaranteed Maximum Price” or “GMP” and shall constitute the Contract Price.
- 3.2 The Contract Price is all inclusive and includes all Work; all federal, state, and local taxes on materials and equipment, and labor furnished by Contractor, its subcontractors, subconsultants, architects, engineers, and vendors or otherwise arising out of Contractor’s performance of the Work, including any increases in any such taxes during the term of this Contract; and any duties, fees, and royalties imposed with respect to any materials and equipment, labor or services. The taxes covered hereby include (but are not limited to) occupational, sales, use, excise, unemployment, FICA, and income taxes, customs, duties, and any and all other taxes on any item or service that is part of the Work, whether such taxes are normally included in the price of such item or service or are normally stated separately. Notwithstanding the foregoing, each party shall bear such state or local inventory, real property, personal property or fixtures taxes as may be properly assessed against it by applicable taxing authorities.
- 3.3 Pursuant to Public Contract Code section 22300, at the request and expense of Contractor, securities equivalent to the amount withheld may be deposited by Contractor with the County, State Treasurer or with a state or federally chartered bank as the escrow agent, who shall release such securities to Contractor upon satisfactory completion of the Contract. Alternatively, Contractor may request, pursuant to Public Contract Code section 22300, that payment of retentions be made directly to the escrow agent. Contractor shall receive the interest earned on the investments upon the same terms provided for in section 22300 for securities deposited by the Contractor. Upon satisfactory completion of the Contract, Contractor shall receive from the escrow agent all securities, interest and payments received by the escrow agent from the County.

Article IV. Project Manager and Construction Manager

- 4.1 The Project Manager shall be the County's Director of Solid Waste or his or her designee. The Project Manager shall have the authority to stop work immediately on the job if hazardous or detrimental conditions are suspected, and shall represent the County in all matters pertaining to this Contract except where approval by the Board of Supervisors is specifically required.
- 4.2 The County may assign part of the Project Manager's rights, responsibilities and duties to a Construction Manager. Project Manager shall inform Contractor of such assignment and the extent of Construction Manager's authority.

Article V. Contractor's Representations and Warranties

In order to induce the County to enter into this Contract, Contractor makes the following representations and warranties:

- 5.1 Contractor has visited the site and has examined thoroughly and understood the nature and extent of the Work, locality, actual conditions, as built conditions, and all local conditions and federal, state and local laws and regulations that in any manner may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the design and the means, methods, techniques, sequences or procedures of construction to be employed by Contractor and safety precautions and programs incident thereto.
- 5.2 Contractor has considered the physical conditions at or contiguous to the site or otherwise that may affect the cost, progress, performance or furnishing of the Work, as Contractor considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions.

Article VI. Contract Documents

- 6.1 Contract Documents. The Contract Documents comprise the entire agreement between the County and Contractor concerning the Work, and consist of the following, each of which is on file in the office of the General Services Administration. All Contract Documents relating to this project are hereby made a part of and incorporated herein by reference into this Contract. The Contract Documents include:
 1. Project Manual: Invitation to Bid 24-01, Construction Contract, General Conditions, Division 01 General Requirements Volume 1, Volumes 1 Technical Specifications Divisions 02 through 33 and As-Built Drawings (Phase 1 Landfill Gas Extraction System and Post Closure Maintenance Construction Drawings 2002) Vector Engineering, Inc.
 2. Drawings and Plans (ITB 24-01 Bid Set Plans APTIM/NV5 – 22 pages).
 3. Escrow Agreement, if any.
 4. Agreement and Release of Any and All Claims.
 5. Contractor, Subcontractor and Subconsultant List.
 6. Notice to Proceed.
 7. Construction Performance Bond.
 8. Construction Labor and Material Payment Bond.

- 6.2 There are no Contract Documents other than those listed above in this Article VI or in the General Conditions or Division I General Specifications. The Contract Documents may only be amended, modified or supplemented as provided in the General Conditions.

Article VII. Miscellaneous

- 7.1 Terms used in this Contract are defined in the General Conditions, and Division I General Specifications, Section 01090, and will have the meaning indicated therein.
- 7.2 It is understood and agreed that in no instance is any party signing this Contract for or on behalf of the County or acting as an employee or representative of the County liable on this Contract, or upon any warranty of authority, or otherwise, and it is further understood and agreed that liability of the County is limited and confined to such liability as authorized or imposed by the Contract Documents or applicable law.
- 7.3 The successful bidder shall not discriminate against any employee or applicant for employment because of race, creed, color, national origin or ancestry, physical handicap, mental condition, marital status or sex. The Contractor will comply with Section 1735 of the Labor Code and all provisions of Executive Order No 10925 of March 6, 1961, as amended, and all rules, regulations and relevant orders of the President's committee on Equal Opportunity created thereby. The Contractor shall also comply with the California Fair Employment and Housing Act (Government Code, Section 12900 and following).
- 7.4 Alcohol-Free and Drug-Free Work Place Policy.
- 7.4.1 That while performing any services pursuant to the Contract, being present on any County property, or using any County equipment, the Contractor, its employees, sub-contractors and agents (1) Shall not be in any way be impaired because of being under the influence of alcohol or a drug; (2) Shall not possess, consume, or be under the influence of alcohol and/or an illegal drug; and (3) Shall not sell, offer, or provide alcohol or an illegal drug to another person.
- 7.4.2 If Contractor, or any employees, sub-contractors violate any of the above provisions, the County may terminate the Contract immediately.
- 7.5 Title to Materials. All material resulting from removal work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of in accordance with Federal, State and local regulations and the Contract Documents.
- 7.6 Assignment. This Contract shall not be assigned nor shall any work to be performed herein by Contractor or Subcontractor or money due or to become due be assigned without express written consent by the Board of Supervisors of Amador County.
- 7.7 Contractor shall indemnify, defend (upon the request of the County) and hold harmless County and County's agents, board members, elected and appointed officials and officers, employees, volunteers and authorized representatives from any and all losses, liabilities, charges, damages, claims, liens, causes of action, awards, judgments, costs, and expenses (including, but not limited to, reasonable attorney's fees of County Counsel and counsel retained by County, expert fees, costs and staff time, and investigation costs) of whatever kind or nature (collectively "Claims"), that arise out of or are in any way connected with the performance of this Contract

by Contractor or Contractor's officers, agents, employees, independent contractors, subcontractors, or authorized representatives. Without limiting the generality of the foregoing, the same shall include injury, or death to any person or persons, damage to any property, regardless of where located, including the property of the County, and any workers' compensation claim or suit arising from or connected with any services performed pursuant to this Contract on behalf of Contractor by any person or entity.

- 7.8 In entering into a public contract or a subcontract to supply goods, services or materials pursuant to a public contract, the Contractor or subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. § 15) or under the Cartwright Act, (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the County tenders final payment to the Contractor, without further acknowledgment by the parties.
- 7.9 The Work is a “public work” as defined in the California Labor Code, for which payment of prevailing wages is required. 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 available on file at the County office, and shall be made available to any interested party on request.
- 8.10 Pursuant to Government Code section 8546.7, the performance of any work under this Contract is subject to the examination and audit of the State Auditor at the request of County or as part of any audit of County for a period of three years after final payment under the Contract. Each party hereto shall retain all records relating to the performance of the Work and the administration of the Contract for three-years after final payment hereunder.
- 8.11 The funding for the Work performed pursuant to this Agreement is provided, in whole or part, from the federal government. Therefore, Contractor shall also fully and adequately comply with the federal requirements included in Attachment A, attached and incorporated by this reference and made part of this Agreement.
- 7.12 This Contract shall be deemed to have been entered into in the County of Amador, and governed in all respects by California law.
- 7.13 **Notice:** A Contractor or Subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for Public Work, as defined in this chapter, unless currently registered and qualified to perform Public Work pursuant to Section 1725.5 of the Labor Code. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform Public Work pursuant to Section 1725.5 of the Labor Code at the time the contract is awarded.
- 7.14 All Products Must Meet BABAA Requirements.

Contractor shall include Manufacturer’s Certification for Build America, Buy America Act (“BABAA”) requirements with all applicable submittals. If a specific manufacture is used in the bidding, a statement that each applicable Manufacturer will comply with BABAA, must be

included with the bid submission. Contractor shall comply with BABAA requirements, including coordination with manufacturers, distributors, and suppliers to correct deficiencies in any BABAA requirement and documentation.

For any change orders, Contractor shall provide BABAA compliant documentation for any new products or materials required by the change.

Installation of materials or products that are not compliant with BABAA requirements shall be considered defective work. An approved Manufacturer's Certification or waiver prior to items being delivered to the project site is required.

Contractor shall certify upon completion that all work and materials have complied with BABAA requirements. By submitting an application for payment, based in whole or in part on furnishing equipment or materials, Contractor certifies that such equipment and materials, to contractor's knowledge, are compliant with BABAA requirements.

IN WITNESS WHEREOF the parties to these presents have hereunto set their hands and seals and have executed this contract in quadruplicate the day and year first above written.

COUNTY OF AMADOR

CONTRACTOR:

BY: _____
Chairman, Board of Supervisors

BY: _____

Name: _____

Title: _____

Federal I.D. No.: _____

APPROVED AS TO FORM:
GREGORY GILLOTT
AMADOR COUNTY COUNSEL

ATTEST:
JENNIFER BURNS, CLERK OF THE
BOARD OF SUPERVISORS

BY: _____

BY: _____

ATTACHMENT A FEDERAL CONTRACT PROVISIONS

BUILD AMERICA, BUY AMERICA ACT REQUIREMENTS

Domestic Preference: Iron and steel products, Manufactured Products, and Construction Materials used in this project shall comply with the Build America, Buy America Act (“BABAA”) requirements mandated by Title IX of the Infrastructure Investment and Jobs Act (“IIJA”), Pub. L. 177-58.

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the sponsor, the Federal Aviation Administration, and the Comptroller General of the United States or any of their duly authorized representatives, access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

DAVIS BACON ACT

The work to be performed hereunder shall be financed in whole or in part with federal funds; therefore Federal Prevailing Wage Determination issued under the Davis-Bacon and Related Acts shall apply to this Agreement and is applicable to the Work.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly

period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis- Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Contractor may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis- Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The sub recipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally- assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/whd/forms/wh347instr.htm> or its successorsite.

The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide

addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or sub contractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in

accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of

this clause include disputes between the contractor (or any of its subcontractors) and sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identify or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or

applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

TRAFFICKING IN PERSONS

a. Provisions Applicable to Contractor.

- i. Contractor and Contractor's employees may not—
 1. Engage in severe forms of trafficking in persons during the Term of this Agreement;
 2. Procure a commercial sex act during the Term of this Agreement; or
 3. Use forced labor in the performance of the Work.
- ii. The County may unilaterally terminate this award, without penalty, if Contractor that is a private entity—
 1. Is determined to have violated a prohibition in this provision during the Agreement; or
 2. Has an employee who is determined by the County to have violated a prohibition in section during the Agreement through conduct that is either—
 - a. Associated with performance of the Work; or
 - b. Imputed to Contractor using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR Part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our Agency at 2 CFR Part 1532.

b. Additional Provisions.

- i. Contractor must inform the County immediately of any information received from any source alleging a violation of a prohibition in subsection a above during the Term of this Agreement.
- ii. County's right to terminate unilaterally that is described in paragraph a and b:
 1. Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and
 2. Is in addition to all other remedies for noncompliance that are available to us under this award.
- iii. Contractor must include the requirements of paragraph a of this award term in any subcontract made to a private entity.

c. Definitions. For purposes of this award term:

- i. "Employee" means either:
 1. An individual employed by you or a subcontractor who is engaged in the performance of the project or program under this award; or
 2. Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose

- services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
- ii. “Forced labor” means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
 - iii. “Private entity”:
 - 1. Means any entity other than a State, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.
 - 2. Includes:
 - a. A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).
 - b. A for-profit organization.
 - iv. “Severe forms of trafficking in persons,” “commercial sex act,” and “coercion” have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

COMPLIANCE WITH THE COPELAND “ANTI-KICKBACK” Act.

a. Contractor. The contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.

b. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

c. Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.

BYRD ANTI-LOBBYING AMENDMENT (31 USC 1352)(as amended).

Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Contractor shall also disclose to County any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.

Contractors who apply or bid for an contract award of more than \$100,000 shall file the required certification for regarding lobbying attached and incorporated herein as Attachment C-1. Each tier certifies to the tier above that it will not and has not used federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the federal awarding agency.

SUSPENSION AND DEBARMENT

- (1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the consultant is required to verify that none of the consultant's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).
- (2) The consultant must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (3) By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.
- (4) This certification is a material representation of fact relied upon by the County of Amador. If it is later determined that the consultant did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the County of Amador, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (5) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

PROCUREMENT OF RECOVERED MATERIALS

Consultant agrees to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- a) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or,

The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at:

www.epa.gov/epawaste/conservation/tools/cpg/products/.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

Attachment A-1

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form – LLL, “Disclosure of Lobbying Activities,” in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(Name)

(Date)

(Title)

Construction Performance Bond

Construction Labor and Material Payment Bond

GENERAL CONDITIONS ATTACHMENT A

CONSTRUCTION PERFORMANCE BOND

This Construction Performance Bond ("Bond") is dated _____, 20__, is in the penal sum of \$ _____, and is entered into by and between the parties listed below to ensure the faithful performance of the Construction Contract listed below. The Bond consists of this page and the Bond Terms and Conditions, Paragraphs 1 through 12, attached to this page. Any singular reference to _____ ("Contractor"), _____ ("Surety"), County of Amador ("County") or other party shall be considered plural where applicable.

CONTRACTOR:

SURETY:

Firm Name: _____

Firm Name: _____

Address: _____

Address of Principal Place of
Business: _____

COUNTY OF AMADOR
810 Court Street
Jackson, CA 95642

Project Manager:

Construction Contract:

Location: Amador County, CA

Construction Contract dated _____,
20__ in the amount of
\$ _____.

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title

Signature: _____
Name and Title

BOND TERMS AND CONDITIONS

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to County for the complete and proper performance of the Construction Contract, which is incorporated herein by reference.
2. If Contractor completely and properly performs all of its obligations under the Construction Contract, Surety and Contractor shall have no obligation under this Bond.
3. If there is no County Default, Surety's obligation under this Bond shall arise after:
 - 3.1 County has declared a Contractor Default under the Construction Contract pursuant to the terms of the Construction Contract; and
 - 3.2. County has agreed to pay the Balance of the Contract Sum to:
 - 3.2.1 Surety in accordance with the terms of this Bond and the Construction Contract, or
 - 3.2.2 To a contractor selected to perform the Construction Contract in accordance with the terms of this Bond and the Construction Contract.
4. When County has satisfied the conditions of Paragraph 3, Surety shall promptly (within thirty (30) days) and at Surety's expense elect to take one of the following actions:
 - 4.1 Arrange for Contractor, with consent of County, to perform and complete the Construction Contract (but County may withhold consent, in which case Surety must elect an option described in paragraphs 4.2, 4.3 or 4.4, below); or
 - 4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
 - 4.3 Obtain bids from qualified contractors acceptable to County for a contract for performance and completion of the Construction Contract, and, upon determination by County of the lowest responsible bidder, arrange for a contract to be prepared for execution by County and the contractor selected with County's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract; and, if Surety's obligations defined in Paragraph 6, below, exceed the Balance of the Contract Sum, then Surety shall pay to County the amount of such excess; or
 - 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances, and, after investigation and consultation with County, determine in good faith the amount for which it may then be liable to County under Paragraph 6, below, for the performance and completion of the Construction Contract and, as soon as practicable after the amount is determined, tender payment therefor to County with full explanation of the payment's calculation. If County accepts Surety's tender under this paragraph 4.4, County may still hold Surety liable for future damages then unknown or unliquidated resulting from Contractor Default. If County disputes the amount of Surety's tender under this paragraph 4.4, County may exercise all remedies available to it at law to enforce Surety's liability under paragraph 5 below.

5. If Surety does not proceed as provided in Paragraph 4, above, then Surety shall be deemed to be in default on this Bond ten (10) days after receipt of an additional written notice from County to Surety demanding that Surety perform its obligations under this Bond. At all times County shall be entitled to enforce any remedy available to County at law or under the Construction Contract including, without limitation, and by way of example only, rights to perform work, protect work, mitigate damages, or coordinate work with other consultants or contractors.
6. Surety's monetary obligation under this Bond is limited by the amount of this Bond. Subject to these limits, Surety's obligations under this Bond are commensurate with the obligations of Contractor under the Construction Contract. Surety's obligations shall include, but are not limited to:
 - 6.1 The responsibilities of Contractor under the Construction Contract for completion of the Construction Contract and correction of defective work;
 - 6.2 The responsibilities of Contractor under the Construction Contract to pay liquidated damages, and for damages for which no liquidated damages are specified in the Construction Contract, actual damages caused by non-performance of the Construction Contract, including but not limited to all valid and proper backcharges, offsets, payments, indemnities, or other damages,
 - 6.3 Additional legal, design professional and delay costs resulting from the Contractor Default or resulting from the actions or failure to act of Surety under Paragraph 4, above.
7. No right of action shall accrue on this Bond to any person or entity other than County or its heirs, executors, administrators, or successors.
8. Surety hereby waives notice of any change, alteration or addition to the Construction Contract or to related subcontracts, purchase orders and other obligations, including changes of time. Surety consents to all terms of the Construction Contract, including provisions on changes to the Contract. No extension of time, change, alteration, modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Bond or in any way affect the obligations of Surety on this Bond.
9. Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction where a proceeding is pending between County and Contractor regarding the Construction Contract, or in the courts of the County of Amador, or in a court of competent jurisdiction in the location in which the work is located.
10. Notice to Surety, County or Contractor shall be mailed or delivered to the address shown on the signature page.
11. Any provision in this Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.
12. Definitions:
 - 12.1. Balance of the Contract Sum: The total amount payable by County to Contractor pursuant to the terms of the Construction Contract after all proper adjustments have been made under the Construction Contract, for example, deductions for progress payments made, and increases/decreases for approved modifications to the Construction Contract.

- 12.2 Construction Contract: The agreement between County and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 12.3 Contractor Default: Material failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract, including but not limited to the provisions of the General Conditions.
- 12.4 County Default: Material failure of County, which has neither been remedied nor waived, to pay Contractor progress payments due under the Construction Contract or to perform other material terms of the Construction Contract, if such failure is the cause of the asserted Contractor Default and is sufficient to justify Contractor termination of the Construction Contract.

END OF DOCUMENT

GENERAL CONDITIONS ATTACHMENT B

CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

This Construction Labor and Material Payment Bond ("Bond") is dated _____, 20___, is in the penal sum of \$_____, and is entered into by and between the parties listed below to ensure the payment of claimants under the Construction Contract listed below. The Bond consists of this page and the Bond Terms and Conditions, Paragraphs 1 through 13, attached to this page. Any singular reference to _____ ("Contractor"), _____ ("Surety"), County of Amador ("County") or other party shall be considered plural where applicable.

CONTRACTOR:

SURETY:

Firm Name: _____

Firm Name: _____

Address: _____

Address of Principal Place of
Business: _____

COUNTY OF AMADOR
810 Court Street
Jackson, CA 95642

Project Manager:

Construction Contract:

Location: Amador County, CA

Construction Contract dated _____,
20___ in the amount of
\$ _____.

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title

Signature: _____
Name and Title

BOND TERMS AND CONDITIONS

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to County and to Claimants to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to County, this obligation shall be null and void if Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and
 - 2.2 Defends, indemnifies and holds harmless County from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided County has promptly notified Contractor and Surety (at the address described in Paragraph 10) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to Contractor and Surety, and provided there is no County Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly through its subcontractors, for all sums due Claimants. However, if Contractor or its subcontractors fail to pay any of the persons named in Section 9100 of the California Civil Code, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Construction Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Contractor or subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, then Surety will pay for the same and also, in case suit is brought upon this bond, a reasonable attorneys' fee, to be fixed by the court.
4. Consistent with the California Mechanic's Lien Law, Civil Code §8000, et seq., Surety shall have no obligation to Claimants under this Bond unless the Claimant has satisfied all applicable notice requirements.
5. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety under this Bond.
6. Amounts due Contractor under the Construction Contract shall be applied first to satisfy claims, if any, under any Construction Performance Bond and second, to satisfy obligations of Contractor and Surety under this Bond.
7. County shall not be liable for payment of any costs, expenses, or attorneys' fees of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
8. Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Suit against Surety on this Payment Bond may be brought by any Claimant, or its assigns, at any time after the Claimant has furnished the last of the labor or materials, or both, but, per Civil Code §9558, must be commenced before the expiration of six months after the period in which stop notices may be filed as provided in Civil Code §9356.

10. Notice to Surety, County or Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, County or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown-on the signature page.
11. This Bond has been furnished to comply with the California Mechanic's Lien Law, including, but not limited to, Civil Code §§9550, 9554, *et seq.* Any provision in this Bond conflicting with said statutory requirements shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirements shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
13. DEFINITIONS
 - 13.1.1 Claimant: An individual or entity having a direct contract with Contractor or with a subcontractor of Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract, as further defined in California Civil Code §9100. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of Contractor and Contractor's subcontractors, and all other items for which a stop notice might be asserted. The term Claimant shall also include the Unemployment Development Department as referred to in Civil Code §9554.
 - 13.1.2 Construction Contract: The agreement between County and Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 13.1.3 County Default: Material failure of County, which has neither been remedied nor waived, to pay Contractor as required by the Construction Contract, provided that failure is the cause of the failure of Contractor to pay the Claimants and is sufficient to justify Contractor termination of the Construction Contract.

END OF DOCUMENT

GENERAL CONDITIONS

GENERAL CONDITIONS

1.00 DEFINITIONS

Addendum: Written change or revision to the Contract Documents issued to the prospective bidders prior to the time of receiving bids.

Alternate: The sum to be added to or deducted from the base bid if the change in scope of work as described in Alternates is accepted by County.

Approved: Approved by County unless otherwise indicated in the Contract Documents.

Architect: The person holding a valid license to practice Architecture or its firm which has been designated within the Contract Documents as the Architect to provide architectural services on the Project.

When "Architect" is referred to within the Contract Documents and no Architect has been designated, then the matter shall be referred to County.

Bid: The properly completed and signed proposal to perform the construction work described in the Contract Documents.

Bid Division(s): A category of work into which the Project has been divided in order to facilitate bidding, construction and project delivery.

Board: The duly elected Board of Supervisors of Amador County.

Claim: As defined in the California Public Contract Code section 20104, a demand by Contractor for a time extension, payment of money or damages arising from work done by or on behalf of Contractor pursuant to the Contract for a Public Work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or an amount the payment of which is disputed by Construction Manager, if any, or County.

Closeout Documents: Documents required as a condition of final payment, as defined in Division 01 General Requirements Section 01 77 00.

Construction Manager: The firm, if any, designated by County and the Contract Documents to provide construction management services for the Project. Unless Contractor is directed differently by County, Construction Manager shall have the authority to act on behalf of County for all purposes consistent with Construction Manager's scope of work under the Construction Management Agreement. If there is no Construction Manager, the rights, obligations and duties of the Construction Manager described herein shall be performed by or inure to the benefit of the Project Manager.

Contract: The legally binding agreement between County and Contractor wherein Contractor agrees to furnish the labor, materials, equipment, plant and appurtenances required to perform the Work described in the Contract Documents and County agrees to pay Contractor for such work.

Contractor: The person, firm or corporation holding a valid California Contractor's license, who has contracted with County to perform the Work described in the Contract Documents. The term Contractor shall be construed to mean all of its officers, employees, subcontractors, suppliers or other persons engaged by it upon the Work of the Project.

Contract Documents: The Contract Documents consist of the Project Manual: Invitation to Bid 24-01, Construction Contract, General Conditions, Volume 1 General Requirements Division 01, Volume 1 Technical Specifications Divisions 02 through 33 and As-Built Drawings (Phase 1 Landfill Gas Extraction System and Post Closure Maintenance Construction Drawings 2002) Vector Engineering, Inc. Construction Quality Assurance and Quality Control Plan. Drawings and Plans (ITB 24-01 Bid Set Plans APTIM/NV5 **and all applicable State and federal requirements contained herein.**

Contract Sum or Contract Price: "Contract Sum" or "Contract Price" is the total amount payable to Contractor for the performance of the Work under the Contract Documents. The Contract Sum is the amount stated in the Contract for construction, including authorized adjustments thereto.

Contract Time: "Contract Time" shall mean the period specified for completion of the Work, as set forth in the Contract for construction and adjusted by any change order issued pursuant to the Contract Documents.

Contract Drawings or Plans: The "Contract Drawings" (sometimes referred to as the "construction drawings," "technical drawings", "drawings", or "plans") are the plans and working drawings that show the location, character, dimensions and details of the Work, and all supplemental drawings issued by County or Architect. Once approved, all such drawings are incorporated into and become a part of the Contract Documents.

Contract Specifications: The "Contract Specifications" (sometimes referred to as the "construction specifications" or "technical specifications") are the working specifications that define the quality, material makeup and installation procedures of the Work. Once approved, the specifications are incorporated into and become a part of the Contract Documents.

Date of Commencement: "Date of Commencement" is the date established in the Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract for construction or such other date as may be established therein.

Date of Completion: The "Date of Completion" is the date certified by County or Construction Manager when construction of the Work is 100% complete, including acceptance by County and Architect of all punch list corrections.

Day: Unless otherwise expressly defined, a "day" shall mean a calendar day of 24 hours, including each and every day of the year.

Business Day: The term business day means Monday through Friday, except the legal public holidays specified in 5 U.S.C. 6103, any day declared to be a holiday by federal statute or executive order, or any day with respect to which the U.S. Office of Personnel Management has announced that Federal agencies in the Washington, DC, area are closed.

Engineer: The person holding a valid license to practice Engineering or its firm which has been designated within the Contract Documents as the Engineer to provide engineering services on the Project.

Furnish: Purchase and deliver to site of installation.

Inspector/Inspector of Record/IOR: The person engaged to inspect the workmanship, materials, and manner of construction of buildings or portions of buildings to determine if such construction complies with the Contract Documents and applicable codes. Inspector is subject to approval by Construction

Manager (if any), Architect or Engineer and County, and will report to County for administrative control purposes. Inspector of Record will keep and maintain daily records of jobsite conditions, a log of inspection requests and the results of all inspections, including notices of inadequate workmanship or sub-standard installations. IOR's records will be kept on file at the jobsite. IOR will work under the general direction of Project Manager.

Indicated (or As Shown): Shown on drawings or as specified, whichever is more restrictive.

Install: Fix in place, for materials; and fix in place and connect, for equipment.

Master Schedule: A schedule prepared by Project Manager or its consultant that is based upon the Preliminary Construction Schedule and scheduling information provided by Contractor, which shall serve as the baseline schedule for completion of the Project in accord with the specified time limits set forth in the Contract. All schedule updates will be predicated upon the Master Schedule.

Milestone: A deadline for completing a specified portion of the Project or Work. It is the deadline by which all work required to complete a particular milestone activity is accomplished.

Modification: An authorized change to the Contract Documents that may (but not necessarily) include a change in Contract Price and/or Contract Time.

Preliminary Construction Schedule: The schedule produced by Project Manager and included in the bid documents, which establishes the Milestone dates for completion of each major activity as well as the phasing of work.

Project Manager: The County employee designated by County to represent County with respect to the Project.

Reference Drawings: As defined in **Paragraph 1.01(A) 3** below.

Subcontractor: A person, firm, or corporation that is required by law to be and who is licensed to and will perform work, labor, or render services to Contractor in or about the construction of the Work, or who, under subcontract to Contractor, fabricates and installs a portion of the work or improvement. All persons or firms within the authority of the Subletting and Subcontracting Fair Practices Act, Chapter 2 of Division 5, Title I of the Public Contract Code, commencing with section 4100.

Work: The "Work" shall mean the scope of work defined in the Contract Documents.

1.01 INVESTIGATIONS, SUBCONTRACTORS AND SUBCONSULTANTS

A. INVESTIGATION REQUIRED

1. Prior to submitting a bid for this Contract and prior to proceeding with the construction, Contractor must perform the investigations, research and analysis referred to in the Contract. Contractor is charged with all information and knowledge that a reasonable contractor would ascertain from having performed this required work, investigation, research and analysis. The Contract Price shall include the entire cost of all work "incidental" to completion of the Work, as that term is defined in Paragraph 1.05.F of these General Conditions.
2. Conditions Shown or Indicated in the Contract Documents: County only warrants, and Contractor may only rely on the accuracy of limited types of information shown or

indicated in the Contract Documents as they refer to underground conditions, as-built conditions, or other conditions or obstructions.

- a. As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation, express or implied, that such information is correctly shown or indicated, so long as such information is verifiable by independent investigation. Contractor is required to make an independent investigation and verify existing conditions as a condition to contracting. In proceeding with the construction, Contractor shall rely on the results of its own independent investigation and shall not rely on County-supplied information regarding above ground conditions or as-built conditions.
 - b. As to any subsurface condition shown or indicated in the Contract Documents, 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. County is not responsible for the completeness of such information for negotiating, contracting, or construction; nor is County responsible in any way for any opinions, conclusions or opinions of Contractor drawn from such information; nor is County responsible for subsurface conditions that are not specifically shown (for example, County is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).
3. Conditions Shown In Reports and Drawings Supplied for Informational Purposes: Reference is made to the Reference Drawings for identification of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site that have been made available for informational purposes only. Contractor should note that existing structures or facilities may differ from records on file, or may have been altered, and that no representation is made, nor responsibility taken nor warranty given either express or implied, by County as to the accuracy of locations and other data shown on records. Contractor shall conduct all necessary investigations and become familiar with any and all actual as-built conditions rather than rely on the Reference Drawings.
 4. Contractor must take into account the possibility that above ground and subsurface conditions affecting cost or quantities of Work may differ from those indicated in the Contract Documents or in the information supplied for informational purposes.
 5. Except for the limited reliance authorized above, and except in the case of latent conditions not discoverable upon a diligent investigation (including, but not limited to, the work, research, investigations and analysis referred to in the Contract and required by this Document), Contractor may not rely upon or make any claim against County, or any of its consultants, with respect to: the completeness of any information referred to above for Contractor's purposes, including, but not limited to, preparation of Contractor's Bid, any aspect of the design or means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or other data, interpretations, opinions and information contained or indicated in such information; or any Contractor interpretation of or conclusion drawn from any technical data or other such data, interpretations, opinions or information, contained in such information.

B. CONTRACTORS, SUBCONTRACTORS AND SUBCONSULTANTS

1. In accordance with Subcontractor Listing Form submitted by Contractor as a part of the Bid, Contractor must list and provide required information for those major subcontractors and subconsultants who will perform a portion of Work. Contractor shall provide the following information:
 - a. Name of contractor, subcontractor or subconsultant.
 - b. Business address of contractor, subcontractor or subconsultant.
 - c. Brief description of portion of Work to be performed under subcontract.
 - d. Contractor's, subcontractor's or subconsultant's California Contractor's State License Number or Professional License Numbers.
2. Contractor shall constantly give personal attention to faithful execution of Work, whether performed by Contractor's own forces or under subcontract, and shall keep the work under personal control and shall not assign by power of attorney or otherwise, nor subcontract the whole or any part thereof, except as herein provided.
3. Contractor shall comply with all requirements of the Subletting and Subcontracting Fair Practices Act, Public Contract Code section 4100 *et seq.* If Contractor does not specify a subcontractor for any portion of the Work valued in excess of 1/2% of the Contract Sum, it agrees to perform that portion of the Work with its own forces. Contractor shall not substitute any other person or firm as a subcontractor, other than those listed in the bid submitted by him, without the written approval of the County. County and Construction Manager shall have the right to approve all subcontractors proposed for use by Contractor, and to this end, may require financial, performance and such additional information as is needed to secure this approval. If a subcontractor is not approved, Contractor shall promptly submit another of the same trade for approval. County shall be a designated intended third-party beneficiary of all subcontracts and subconsultant agreements. Contractor acknowledges and agrees that County accepts no responsibility or liability for disapproval of any proposed subcontractor or subconsultant and agrees to indemnify and save harmless County and its officers, directors, representatives, consultants, agents, employees, and Construction Manager for any loss, damage, claim, expense or liability arising out of such disapproval by County of any proposed subcontractor or subconsultant. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and County, Construction Manager or Architect or Engineer.
4. Contractor shall not substitute any other person or firm as a subcontractor or subconsultant in place of any of those listed in the bid, nor shall any subcontractor or subconsultant assign or transfer a subcontract, or permit the same to be performed by any other contractor, without written approval of County. Should Contractor let out or subcontract any portion of the Work in violation of this requirement, County shall have the right to terminate the Contract for cause, assess Contractor a penalty of ten percent (10%) of the amount of the subcontract involved, or both, in its sole discretion.
5. Each subcontractor or subconsultant shall be reliable and responsible and fully able to perform the portion of the Work covered by the proposed subcontract or assignment, and able to complete the Work in accordance with the Contract Documents. Contractor shall not perform work on the Project with a subcontractor who is ineligible to perform work on public works projects pursuant to Labor Code sections 1777.1 or 1777.7.
6. Contractor shall insert appropriate provisions in all subcontracts pertaining to work on this Project requiring the subcontractors to be bound by all applicable terms of the Contract Documents. Contractor shall be as fully responsible for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for

the acts and omissions of persons directly employed by it. No subcontract or assignment of this contract shall relieve Contractor or Sureties of liabilities or obligations under the Contract. Contractor's surety must give written consent to all subcontractor or subconsultant assignments.

7. No assignment by Contractor of the Contract or any part thereof, or funds to be received thereunder by Contractor, will be recognized unless such assignment has the written approval of County and Surety has been given due notice and approved of such assignment in writing.
8. Contractor shall require each of its subcontractors and subconsultants to execute agreements containing indemnity provisions coextensive with those in the Contract.
9. County, Construction Manager, and Architect or Engineer shall be obligated to deal only with Contractor, and Contractor shall be responsible for the proper execution of the Work. Any and all discussions between any subcontractor or supplier and the County, Construction Manager, or Architect or Engineer shall, to the extent possible, be initiated through Contractor or its representative.
10. When any portion of the Work that has been subcontracted by Contractor is not being executed in a satisfactory manner, or when materials supplied do not conform to the Contract Documents, County or Construction Manager may direct Contractor to discharge the subcontractor or supplier. Any subcontractor or supplier that is discharged shall not again be employed on the Project. Any termination of a subcontractor pursuant to this section shall be in strict conformity with the requirements of the Subletting and Subcontracting Fair Practices Act, Part 1 of Division 2 of the Public Contract Code, commencing with section 4100.

1.02 DESIGN CONTRACT ADMINISTRATION

NOT USED

1.03 CONTRACT AWARD AND COMMENCEMENT OF THE WORK

A. COMMENCEMENT OF WORK

1. The Contract Time will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within **thirty (30) days** after execution of the Contract. See also **Paragraph 1.15** of these General Conditions.
2. Contractor shall start to perform the Work on the date indicated on the Master Schedule or as directed by the Project Manager.

B. MOBILIZATION AND CONSTRUCTION SCHEDULE

1. Mobilization shall include moving onto the site of all plant and equipment, furnishing and erecting plants, temporary buildings, and other construction facilities, all as required for the proper performance and completion of the Work. Mobilization shall be undertaken in compliance with the requirements of the Contract and any staging plan approved by County and shall include, but not be limited to, the following principal items:
 - a. Moving onto the site Contractor's plant and equipment as required.
 - b. Installing temporary construction power and wiring.
 - c. Establishing fire protection system for its temporary facilities.
 - d. Developing construction water supply.
 - e. Providing field office trailers for Contractor with all specified furnishings and utility services including telephones.
 - f. Providing potable water facilities for Contractor's forces.
 - g. Providing additional temporary facilities for use of County personnel, as set forth in **Division 01 General Requirements Section 01 50 00 (Temporary Facilities and Controls)**.
 - h. Arranging for and erection of Contractor's work and storage yard(s).
 - i. Submittal to County of all required subcontractor or subconsultant insurance certificates and bonds, if required.
 - j. Posting all OSHA required notices and establishment of safety programs.
2. Within **ten (10) business days** following the pre-construction conference, Contractor shall submit to Construction Manager and County, for their review and concurrence, a mobilization plan and construction schedule. The mobilization plan and construction schedule shall be developed in both narrative and graphic format, and shall include, at a minimum, the following:
 - a. A mobilization plan and schedule for initial construction activities, which include but are not limited to interior and exterior demolition, any proposed site excavation and perimeter structural shoring, parking and traffic control, temporary facilities and staging, followed by construction of improvements.

- b. A detailed construction schedule showing in detail how Contractor plans to execute the Work within the Contract Time and as required by the Preliminary Construction Schedule. The schedule shall include activities or milestones encompassing the work of other trades upon which Contractor's Work depends, all Contractor's Work, long-lead procurement requirements, submittals and shop drawings, and an allowance of "weather days" for anticipated inclement weather (see **Paragraph 1.15(B) 4 of these General Conditions** for weather allowance). Contractor's information shall be sufficiently complete and comprehensive to enable Construction Manager to incorporate the information into the Master Schedule, and to allow progress to be monitored on a day-by-day basis. The information for each activity shall include, at a minimum, the activity description, duration, and dependencies on the work of all other activities. All start and completion dates will be established by Construction Manager based on the date of the Notice to Proceed and combined information provided by each Contractor.

In preparing its schedule, Contractor shall ensure that it represents an accurate and efficient plan for accomplishing the Work. Contractor must revise its portion of the schedule as determined by Construction Manager in order to finalize the Master Construction Schedule.

Contractor shall be responsible for coordinating all work necessary and pertaining to the work whether actually detailed as a part of this Contract or attendant thereto. Contractor shall notify Construction Manager and various utility companies of requirements for related work, as far as possible in advance so that work schedules may be developed for all concerned which will permit the most effective accomplishment of the entire Project.

1.04 BONDS AND INSURANCE

A. BONDS

1. Within **ten (10) business days** following award of the Bid to Contractor, Contractor must file with County the following bonds:
 - a. Corporate surety bond, in the form of **Attachment A to these General Conditions**, in a sum not less than 100 percent of the Contract Price, to guarantee faithful performance of Contract ("Performance Bond").
 - b. Corporate surety bond, in the form of **Attachment B to these General Conditions**, in a sum not less than 100 percent of the Contract Price, to guarantee payment of wages for services engaged and of bills contracted for materials, supplies, and equipment used in performance of Contract ("Labor and Material Bond").
2. Corporate sureties on these bonds and on bonds accompanying Proposals must be legally authorized to engage in the business of furnishing surety bonds in the State of California. Sureties must be satisfactory to County and Construction Manager.
3. The Contract Price, as used to determine amounts of bonds, shall be the total amount fixed in the Contract for performance of required Work (or corrected total if errors are found).
4. In the event of increases in the Contract Price by Change Orders, or otherwise, which in the aggregate equal or exceed ten percent (10%) of the Contract Sum, and all such subsequent

increases in the Contract Price thereafter, Contractor shall submit to County, through Project Manager, evidence of additional bond coverage for such increases in the Contract Price. Contractor shall be compensated for such additional bond coverage.

5. If the successful bidder fails to sign and return to the Director of General Services the Contract, and furnish the bonds in the sums specified in the Contract Documents with a surety satisfactory to County Risk Manager within **ten (10) business days** following the award of the Bid, County may, at its option, determine that the bidder has abandoned the Contract, and thereupon the bid and the acceptance thereof shall be null and void, and the security accompanying the bid or the Contract shall be forfeited and become the property of County of Amador.
6. During the period covered by the Contract, if any of the sureties upon the bonds shall become insolvent or unable, in the opinion of County, to pay promptly the amount of such bonds to the extent to which surety might be liable, Contractor, within **thirty (30) days** after receiving written notice, shall provide supplemental bonds or otherwise substitute another and sufficient surety approved by County in place of the surety becoming insolvent or unable to pay. If Contractor fails within such **thirty (30) day** period to substitute another and sufficient surety, Contractor shall, if Construction Manager or the County so elects, be deemed to be in default in the performance of its obligations hereunder and upon its bid and performance bonds, and Construction Manager and the County, in addition to any and all other remedies, may terminate the Contract, bring suit or other proceedings against Contractor and the sureties, or may take such other actions as Construction Manager or County may deem necessary to protect themselves against any potential default by the surety.

B. INSURANCE

1. Within **ten (10) business days** of award of the Bid to Contractor, Contractor shall furnish to County satisfactory proof that Contractor has taken out for the entire period covered by the proposed Contract the following insurance with an insurance carrier satisfactory to County:
 - a. **Commercial General Liability (CGL):** Insurance Services Office (ISO) Form CG 0001 covering CGL on an “occurrence” basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than **\$5,000,000** per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.
 - b. **Automobile Liability:** Insurance Services Office Form CA 0001 covering Code 1 (any auto), with limits no less than **\$2,000,000** per accident for bodily injury and property damage.
 - c. **Workers’ Compensation** insurance as required by the State of California, with Statutory Limits, and Employers’ Liability insurance with a limit of no less than **\$1,000,000** per accident for bodily injury or disease.
 - d. **Builder’s Risk** (Course of Construction) insurance utilizing an “All Risk” (Special Perils) coverage form, with limits equal to the completed value of the project and no coinsurance penalty provisions.
 - e. **Professional Liability** (if Design/Build), with limits no less than **\$2,000,000** per occurrence or claim, and **\$2,000,000** policy aggregate.

If contractor maintains broader coverage and/or higher limits than the minimums shown above, the County requires and shall be entitled to the broader coverage and/or the higher limits maintained by the contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the County.

Self-Insured Retentions

Self-insured retentions must be declared to and approved by the County. The County may require the Contractor to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or the County. The CGL and any policies, including Excess liability policies, may not be subject to a self-insured retention (SIR) or deductible that exceeds \$25,000 unless approved in writing by the County. Any and all deductibles and SIRs shall be the sole responsibility of Contractor or subcontractor who procured such insurance and shall not apply to the Indemnified Additional Insured Parties. The County may deduct from any amounts otherwise due Contractor to fund the SIR/deductible. Policies shall NOT contain any self-insured retention (SIR) provision that limits the satisfaction of the SIR to the Named Insured. The policy must also provide that Defense costs, including the Allocated Loss Adjustment Expenses, will satisfy the SIR or deductible. The County reserves the right to obtain a copy of any policies and endorsements for verification.

Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. **The County of Amador, its officers, officials, employees, and volunteers are to be covered as additional insureds** on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance (at least as broad as ISO Form CG 20 10, CG 11 85 or **both** CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).
2. For any claims related to this project, the **Contractor's insurance coverage shall be primary and non-contributory** insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the County of Amador, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the County of Amador, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it. This requirement shall also apply to any Excess or Umbrella liability policies.
3. Each insurance policy required by this clause shall provide that coverage shall not be canceled, except with notice to the County.

Builder's Risk (Course of Construction) Insurance

Contractor may submit evidence of Builder's Risk insurance in the form of Course of Construction coverage. Such coverage shall **name the County of Amador as a loss payee** as their interest may appear.

Claims Made Policies

If any coverage required is written on a claims-made coverage form:

1. The retroactive date must be shown, and this date must be before the execution date of the contract or the beginning of contract work.

2. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of contract work.
3. If coverage is cancelled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective, or start of work date, the Contractor must purchase extended reporting period coverage for a minimum of five (5) years after completion of contract work.
4. A copy of the claims reporting requirements must be submitted to the County for review.

Umbrella or Excess Policies

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 policies maintained by the Additional Insureds, whether primary or excess, and which also apply to a loss covered hereunder, shall be called upon to contribute to a loss until the Contractor’s primary and excess liability policies are exhausted.

Acceptability of Insurers

Insurance is to be placed with insurers authorized to conduct business in the state with a current A.M. Best rating of no less than A: VII, unless otherwise acceptable to the County.

Waiver of Subrogation

Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. **The Workers’ Compensation policy shall be endorsed with a waiver of subrogation** in favor of the County of Amador for all work performed by the Contractor, its employees, agents and subcontractors.

Verification of Coverage

Contractor shall furnish the County with original certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this clause **and a copy of the Declarations and Endorsements Pages of the CGL and any Excess policies listing all policy endorsements**. All certificates and endorsements and copies of the Declarations & Endorsements pages are to be received and approved by the County before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor’s obligation to provide them. The County of Amador reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these requirements, at any time. The County of Amador reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance meeting all requirements stated herein, and Contractor shall ensure that County of Amador is an additional

insured on insurance required from subcontractors. For CGL coverage, subcontractors shall provide coverage with a form at least as broad as CG 20 38 04 13.

Duration of Coverage

CGL & Excess liability policies **for any construction related work, including, but not limited to, maintenance, service, or repair work**, shall continue coverage for a minimum of 5 years for Completed Operations liability coverage. Such Insurance must be maintained and evidence of insurance must be provided **for at least five (5) years after completion of the contract of work**.

Special Risks or Circumstances

The County of Amador reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

1.05 DRAWINGS AND SPECIFICATIONS

A. INTENT

The Contract Documents are complementary; what is called for by one is as binding as if called for by all. It is the intent of the Contract Documents to describe a functionally complete Project and individual systems therein to be constructed in accordance with the requirements of the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the requirements of the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe the Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning.

All lines and planes appearing on Contract Drawings to be horizontal or vertical and not explicitly indicated otherwise shall be constructed true and plumb. All lines and planes appearing on Contract Drawings to intersect at right angles and not explicitly indicated otherwise shall be constructed at true right angles. Where details are indicated covering specific conditions, such details also apply to all similar conditions not specifically indicated.

B. DRAWING DETAILS AND SPECIFICATION DESCRIPTIONS

The Drawings and Specifications (Divisions 01 through 33) establish technical performance criteria for the Work and, along with the warranty and all other requirements in the Contract Documents, establish the minimum design, material, quality, workmanship and other standards required under the Contract Documents. Contractor has full “turn-key” responsibility to deliver the fully functional, operational Work as referenced in the Contract Documents.

C. SPECIFICATIONS AND DRAWINGS DO NOT CONTROL DIVISION OF WORK

The Divisions and Sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among subcontractors or suppliers or delineating the work to be performed by any specific trade.

D. INTERPRETATION OF CONTRACT, DRAWINGS AND SPECIFICATIONS

Should any discrepancy appear or any misunderstanding arise as to the import of anything contained in the Contract and the Drawings and Specifications included in the Contract Documents, the matter shall be reported to Construction Manager, who shall issue with reasonable promptness written clarification or interpretation of the requirements, which shall be consistent with the intent of and reasonably inferable from the Contract and Drawings and Specifications. County's review of shop drawings, samples and submittals shall not relieve Contractor of its responsibility for complying with the requirements of the Contract Documents.

E. CHECKING/UPDATING OF DRAWINGS

Figured dimensions shall be followed in preference to scaled dimensions, and Contractor shall make all additional measurements necessary for the Work and shall be responsible for their accuracy. Before ordering any material or doing any portion of the Work, Contractor shall verify all measurements at the site and shall be responsible for the correctness of same. Contractor shall develop the final construction drawings (shop drawings) for the Work and, thereafter, during construction, shall continuously check such drawings for conformance to actual conditions and update such drawings to maintain complete and current as-built drawings as construction progresses.

F. INCIDENTAL WORK

Contractor shall provide as part of the Work all labor, materials, equipment, machinery, tools, facilities, services, employee training and testing, hoisting facilities, shop drawings, storage and testing, security, transportation, disposal, the securing of all field dimensions necessary or required, cutting or patching of existing materials, all notices, permits (fees relating to permits issued by County to be paid by County), documents, reports, and agreements and any other items required or necessary to timely and fully complete the Work described and the results intended by the Contract Documents. Reasonably implied parts of the Work shall be performed as "incidental work" even though absent from the Contract and the Drawings or Specifications. Contractor shall perform "incidental" work without extra cost to County. Incidental work includes work not shown in the Contract and the Drawings or Specifications, but which is necessary or normally or customarily required as a part of the Work shown in the Contract and the Drawings or Specifications, or is necessary or required to make each installation satisfactory, legally operable, functional, consistent with the intent of the Contract and the Drawings or Specifications or the requirements of the Contract Documents.

G. DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS

Construction Manager may order that locations, lines and grades for Work vary from those shown on Drawings. Changes may be made in location, lines or grades for Work under any item of the Contract. All changes in the Contract will be made in accordance with Paragraph 1.14 (Modifications) of these General Conditions.

H. STANDARDS TO APPLY WHERE DETAILED SPECIFICATIONS ARE NOT FURNISHED

Wherever in the Contract Documents, or in any orders given by Construction Manager or Project Manager, it is provided that Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the following general specifications shall apply.

1. Design and construction shall meet the standards required to provide County with a first class, fully functional, Project, designed and constructed in a manner consistent with the standards, equipment, materials and design, found in comparable, first class, fully functional, contemporary, public facilities.
2. Materials or manufactured articles shall be of the grade, in quality and workmanship, consistent with the requirements of this Contract and obtainable in the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual 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 for which no detailed specifications are set forth herein shall conform to the requirements of subparagraph (1) above. All such Work shall be consistent with the Contract Documents.
3. Any material, item, or piece of equipment mentioned, listed or indicated without definition of quality, shall be consistent with the quality of adjacent or related materials, items, or pieces of equipment.
4. Any method of installation, finish, or workmanship of an operation called for, without definition of standard of workmanship, shall be installed or performed and finished in accordance with good practice and consistent with adjacent or related installations.
5. Any necessary material, item, piece of equipment or operation not called for but reasonably implied as necessary for proper completion of the Work, shall be furnished, installed or performed and finished; and shall be consistent with adjacent or related materials, items, or pieces of equipment, and in accordance with good practice.

I. PRECEDENCE OF DOCUMENTS

In the case of discrepancy or ambiguity in the Contract Documents, the following order of precedence shall prevail:

1. Modifications in inverse chronological order, and in the same order as specific portions they are modifying (i.e., later-issued language shall take precedence and prevail over earlier conflicting versions or language).
2. Signed Agreement, and terms and conditions referenced therein.
3. General Conditions.
4. Division 01 Requirements.
5. Written numbers over figures, unless obviously incorrect.
6. Large-scale Drawings over small-scale Drawings.

If there is any discrepancy or ambiguity concerning the quality or quantity of Work or materials required under the Contract, Contractor shall (1) immediately bring such discrepancy or ambiguity to the attention of Construction Manager, and (2) without regard to the order of precedence above, provide the better quality of or greater quantity of Work or materials, without an increase in the Contract Price, unless otherwise ordered in writing by County or Construction Manager.

J. SHOP DRAWINGS, SUBMITTALS, INSTALLATION INSTRUCTIONS AND MANUALS TO BE FURNISHED BY CONTRACTOR

1. Contractor shall submit to Construction Manager for review, within **ten (10) business days** after the Notice to Proceed, a preliminary schedule of shop drawings and submittals that will list each required submittal. All shop drawings shall be submitted no later than the time indicated by Construction Manager as necessary to conform to the Master Project Schedule.
2. Contractor shall submit submittals and shop drawings to Construction Manager for review in strict accordance with **Division 01 General Requirements Section 01 33 00 (Submittal Procedures)**. Submission of a submittal or shop drawing shall constitute Contractor's representation that all requirements of **Section 01 33 00 Submittal Procedures** have been complied with. All submittals and shop drawings will be identified as Construction Manager may require, and made in the number of copies specified in **Section 01 33 00 Submittal Procedures**.
3. Contractor shall not perform work requiring submission of a submittal or shop drawing prior to submission and favorable review of the submittal or shop drawing. Where a submittal or shop drawing is required by the Contract Documents or the final schedule of submittals or shop drawings accepted by Construction Manager, any related Work performed prior to favorable review of the pertinent submittal or shop drawing will be at the sole expense, responsibility and risk of Contractor. Review and approval by County or Construction Manager of shop drawings, samples and submittals shall not relieve Contractor of its responsibility to comply with the requirements of the Contract Documents.
4. In addition to information furnished as common practice, submittals shall contain the Project name and location, Contractor's name and address, subcontractor's or supplier's name and address, date of submittal and any revisions, and reference to appropriate specification section, and/or drawing and detail numbers. Contractor and/or its subcontractors shall verify in the field all dimensions and relationships to adjacent work necessary to ensure the proper fit of the items submitted.
5. Three (3) hard copies and a digital file of each of all maintenance instructions, application/installation instructions, and service manuals called for in the Specifications shall be provided by Contractor. These shall be complete as to drawings, details, parts lists, performance data and other information that may be required for County to easily maintain and service the materials and equipment installed under this Contract. All manufacturer's application/installation instructions shall be given to Construction Manager at least **ten (10) business days** prior to first material application or installation of the item. The maintenance instructions and manuals, along with any specified guarantees, shall be delivered to Construction Manager for review prior to final payment, and Contractor or appropriate subcontractors shall instruct County's personnel in the operation and maintenance of all motorized mechanical or electrical equipment prior to final acceptance of the Work.

1.06 CONSTRUCTION BY COUNTY OR BY OTHER CONTRACTORS

A. COUNTY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

1. County may perform construction or operations related to the Work with its own forces, or 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 of the Contract similar to these (including those portions related to insurance and waiver of subrogation), or have other work performed by utility owners.
2. When separate contracts are awarded for different portions of the Work or other construction or operations on the site, the term “Contractor” in the Contract Documents in each case shall mean any other Contractor who executes each separate Contract with County to perform work on a portion of the Project.

B. MUTUAL RESPONSIBILITY

1. Contractor shall afford all other Contractors, utility owners, and County (if County 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, shall ensure that the execution of the Work properly connects and coordinates with their work, and shall cooperate with them to facilitate the progress of the Work.
2. Contractor shall coordinate its work with the work of other separate contractors, County, and utility owners.
3. Unless otherwise provided in the Contract Documents, Contractor shall 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 as shown, or reasonably implied by, the Drawings and Specifications for the Project. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of Construction Manager and the others whose work will be affected. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefor.
4. The duties and responsibilities of Contractor under paragraphs 1 through 3 above are for the benefit of County and also for the benefit of such utility owners and other contractors working at the site to the extent that there are comparable provisions for the benefit of Contractor in direct contracts between County and such utility owners and other contractors.
5. To the extent that any part of Contractor’s Work is to interface with work performed or installed by others, Contractor shall inspect and measure the in-place work and promptly report to Construction Manager any defect in such in-place work that will impede or increase the cost of Contractor’s interface unless corrected. Construction Manager will require the contractor responsible for the defective work to make corrections so as to conform to its contract requirements. If Contractor fails to measure, inspect and/or report defects that are reasonably discoverable, all costs of accomplishing the interface acceptably shall be borne by Contractor. This provision shall be included in any and all other contracts or subcontracts for Work to be performed where such a conflict could exist.

C. CONSTRUCTION MANAGER AUTHORITY OVER COORDINATION

1. Construction Manager is responsible for the overall administration of the Project from the bidding phase through the warranty period. Construction Manager may have on-site at all times during construction, a Project Superintendent who shall be responsible for the day-to-day management of the Project in all matters concerning progress, scheduling,

coordination, staging and cooperation among Contractors. Construction Manager may assign a Project Superintendent who shall, on behalf of County and Architect or Engineer, be responsible for overall administration of the Project including coordination, communication and execution of all directives, requests for quotation and requests for information for County, Architect or Engineer and all other Contractors. Construction Manager will receive and distribute all submittals, shop drawings, samples, payment applications, change orders, requests for change orders, requests for proposals and all correspondence relating to construction of the Work. Construction Manager will observe on-site construction activities and will maintain daily reports of construction activities. Contractor shall recognize any direction or authority provided to Construction Manager by County, and shall work closely and cooperate with Construction Manager.

2. Construction Manager shall have authority over coordination of the activities of other Contractors, work performed by County's own forces, or work performed by utilities on the site. (The authority of Construction Manager with respect to coordination of the activities of other contractors and utility owners, however, shall not in any manner relieve Contractor of its obligation to other contractors and utility owners to coordinate its work with utility owners and other contractors as specified above.) Contractor shall promptly notify Construction Manager in writing when another contractor on the Project fails to coordinate its work with the Work of this Contract.
3. Contractor shall suspend any part of the Work herein specified or shall carry on the same in such manner if directed by Construction Manager when such suspension or prosecution is necessary to facilitate the work of other contractors or workers. No damages or Claims by Contractor will be allowed therefor if the suspension or work change is due in whole or in part to Contractor's failure to perform its obligation to coordinate its work with utility owners and other contractors. If the suspension or work change is due in whole or in part to the failure of another contractor to coordinate its work with Contractor and other contractors and utility owners, then resulting damages or Claims by Contractor will be allowed only to the extent of fault by County. County reserves the right to back charge Contractor for any damages or claims of other contractors incurred as a result of Contractor's failure to perform its obligations to coordinate with other contractors and utility owners, and in its discretion, may interplead funds retained and be absolved of further liability.
4. County may at any time and in its sole discretion designate a person, firm or corporation other than Construction Manager to have authority over the coordination of the activities among the various contractors.

1.07 COUNTY AND PAYMENT

A. COUNTY'S REPRESENTATIVES

The designated authorized representatives of County will have limited authority to act on behalf of County as set forth in the Contract Documents. Except as otherwise provided in these General Conditions, County shall issue all communications to Contractor through Construction Manager or Project Manager, and Contractor shall issue all communications to County through Construction Manager.

B. MEANS AND METHODS OF CONSTRUCTION

1. Subject to those rights specifically reserved in the Contract Documents, County and Construction Manager shall not supervise, direct, or have control over, or be responsible

for, Contractor's means, methods, techniques, sequences or procedures of construction or for the safety precautions and programs incident thereto, or for any failure of Contractor to comply with laws and regulations applicable to the furnishing or performance of Work.

2. County and Construction Manager shall not be responsible for Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

C. RECEIPT AND PROCESSING OF APPLICATIONS FOR PAYMENT

1. Contractor shall prepare the necessary schedules required by **Division 01 General Requirements Section 01 29 00 (Payment Procedures)**, submit applications for progress payments or final payments, and warrant title to all Work covered by each application for payment, as required by **Section 01 29 00 (Payment Procedures)**.
2. County shall review Contractor's applications for payment and make payment thereon as required by **Section 01 29 00 (Payment Procedures)**.

1.08 CONTROL OF THE WORK

A. SUPERVISION OF WORK BY CONTRACTOR

1. Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such personal skills and expertise as may be required and necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction and for the safety precautions and programs incident thereto. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.
2. Contractor shall keep on the site at all times during Work progress on the site a competent resident Superintendent, who shall not be replaced without the express written consent of County. The Superintendent will be Contractor's representative at the site and shall have complete authority to act on behalf of Contractor. All communications to the Superintendent shall be as binding as if given to Contractor. The Superintendent's duties shall include without limitation quality control documentation to County that the Work has been reviewed and either found to meet the terms and conditions of the Contract Documents or has been found deficient and corrective action will be taken promptly.

B. OBSERVATION OF WORK BY CONSTRUCTION MANAGER AND PROJECT MANAGER

Contractor shall perform the Work under the general observation and administration of Project Manager or Construction Manager. Contractor shall immediately comply with orders and instructions given in accordance with terms of Contract by Project Manager or Construction Manager, but nothing herein contained shall be taken to relieve Contractor of its obligations or liabilities under the Contract.

C. ACCESS TO WORK SITE

During performance of Work, County or Construction Manager and their respective agents, representatives, consultants, and employees may at any time enter upon the Site, shops or offices where any part of 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 facilities

therefor, and shall make arrangements with manufacturers to facilitate inspection of their processes and products to such extent as County's interests may require. Other contractors performing work for County may also, for all purposes required by their respective contracts, enter upon the Site. See special access requirements in **Division 01 General Requirements Section 01 14 00 (Work Restrictions)**.

D. EXISTING UTILITIES

1. Pursuant to Government Code Section 4215, County shall be responsible, as between County and Contractor, for the timely removal, relocation or protection of existing main or trunk line utility facilities located on the project site, if, and only if, such utilities are not identified in the drawings and specifications made a part of the contract. County shall compensate Contractor for the cost of locating and repairing damage not due to the failure of Contractor to exercise reasonable care and removing and relocating such utility facilities not indicated on the drawings and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work, such compensation to be determined in accordance with the provisions of these General Conditions.
2. Nothing herein shall be deemed to require County to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site can be inferred from the presence of other visible facilities, such as buildings, trenches, patchwork, meters and junction boxes, on or adjacent to the site of the construction. If Contractor, while performing Contract, discovers utility facilities not identified by County in the contract drawings or specifications, it shall immediately notify County and the utility in writing.

1.09 WARRANTY, GUARANTEE, AND INSPECTION OF WORK

A. WARRANTY AND GUARANTEE

1. 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 possesses or will timely obtain all necessary licenses and/or permits required to perform the Work, as necessary to complete the Work in accordance with the terms of the Contract Documents. Contractor warrants that all applicable design, engineering, design related services, construction work and 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 the Work shall be fit for its intended purpose, watertight and meeting current "state-of-the art" standards for public buildings, and that all systems equipment and each item of materials and equipment incorporated therein shall be new (unless otherwise permitted by County), shall be of suitable grade of its respective kind for its intended use, shall be free from defects in design, engineering, materials, construction and workmanship, and shall conform in all respects with all applicable requirements of federal, state and local laws, licenses, and permits, the Drawings, Specifications, and all descriptions set forth therein, applicable construction codes and standards, and all other requirements of the Contract Documents.
2. Extended Guaranties: If any guaranty exceeding two (2) years is provided by the supplier or manufacturer of any equipment used in the Work, then Contractor's guarantee for such materials shall be extended for such term. Contractor shall supply County with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by its suppliers or manufacturers.

3. Environmental and Toxics Warranty: The covenants, warranties and representations contained in this Paragraph 1.09.A.3 will be effective on the date of recording of the Notice of Completion and will survive completion of the Project. Contractor covenants, warrants and represents to County as of the effective date of the Contract, and as of the date of Final Completion, that:
 - a. No litigation is pending or, to Contractor's knowledge, proposed, threatened or anticipated with respect to Contractor, or with respect to any other matter affecting the Work or the operation thereof.
 - b. To Contractor's knowledge after due inquiry, no lead or asbestos-containing materials were installed or were discovered in the Work at any time during Contractor's construction thereof. If any such materials were discovered, Contractor made immediate disclosure to County.
 - c. To Contractor's knowledge after due inquiry, no electrical transformers, light fixtures with ballast or other equipment containing PCB's were installed as part of the Work at any time during Contractor's construction thereof. If any such materials were discovered, Contractor made immediate disclosure to County.
 - d. To Contractor's knowledge after due inquiry, no storage tanks for gasoline or any other toxic substance are or were located as part of the Work at any time during Contractor's construction thereof except as required to be installed by the Contract Documents. If any such materials were discovered, Contractor made immediate disclosure to County.
 - e. Contractor's operations concerning the Work are not and were not in violation of any applicable environmental federal, state, or local statute, law, ordinance, code, rule, order or regulation dealing with hazardous or toxic materials or substances, and no notice from any governmental body has been served upon Contractor claiming any violation of any such statute, law, ordinance, code, rule, order or regulation, or requiring or calling attention to the need for, any work, repairs, construction, alteration, or installation on or in connection with the Work in order to comply with any such statute, law, ordinance, code, rule, order or regulation, with which Contractor has not complied. If there were or are any such notices, Contractor has provided or shall provide County with copies thereof.

B. INSPECTION OF WORK

1. All materials, equipment and workmanship used in the Work shall be subject to inspection or testing at all times during construction and/or manufacture. Work and materials, and manufacture and preparation of materials, from beginning of construction until final completion and acceptance of the Work, shall be subject to inspection and rejection by County or Construction Manager, or their agents, independent contractors retained by Construction Manager 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.
2. Contractor shall give Construction Manager a 72-hour notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

3. If applicable laws or regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, and furnish Construction Manager with the required certificates of inspection, or approval. County, through Construction Manager or otherwise, retains the right to test and inspect the Work without relieving Contractor of its obligations under the Contract Documents.
4. If any Work (or the work of others) that is required to be inspected, tested or approved is covered by Contractor prior to such inspection, testing or approval, without written approval of Construction Manager, it must, if requested by Construction Manager, be uncovered. Uncovering Work shall be at Contractor's expense unless Contractor has given Construction Manager timely notice of Contractor's intention to cover the same and Construction Manager has given its written approval of the covering of the Work prior to such inspection, testing or approval.
5. In any case where Work is covered contrary to the written request of Construction Manager, it must, if requested by Construction Manager, be uncovered for Construction Manager's observation or inspection at Contractor's expense.
6. Whenever required by Construction Manager, Contractor shall furnish tools, labor and materials necessary to make examination of Work that may be completed or in progress, even to extent of uncovering or taking down portions of finished Work. Should Work be found unsatisfactory, cost of making examination and of reconstruction shall be borne by Contractor, and the time required to execute such work shall be done concurrently with other work so as not to impede on the progress of Work and Contract Time. If Work is found to be satisfactory, examination will be paid for by County in manner herein prescribed for paying for alterations, modifications and extra work, except as otherwise herein specified.
7. Inspection of the Work by or on behalf of County or Construction Manager shall not relieve Contractor of any obligations under the Contract Documents.

C. CORRECTION OF DEFECTIVE WORK

1. If the Work is defective, or Contractor fails to supply suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Construction Manager may order Contractor to replace the defective work or to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Construction Manager to stop the Work shall not give rise to any duty on the part of Construction Manager to exercise this right for the benefit of Contractor or any other party except County.
2. If required by Construction Manager, Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if Work has been rejected by Construction Manager, remove it from the site and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).
3. Correction Period: If within one (1) year after the date of Final Acceptance or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special warranty or guarantee required by the Contract Documents or supplied with regard

to the Work or required by any specific provision of the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to County and in accordance with County or Construction Manager's written instructions, (i) correct such defective Work or, if it has been rejected by County or Construction Manager, remove it from the site and replace it with Work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor does not promptly comply with the terms of such instructions. or in an emergency where delay would cause serious risk of loss or damage, County may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting therefrom (including but not limited to all costs of repair or replacement of work of others) shall be paid by Contractor.

4. In special circumstances where a part of the Work is occupied by County or a particular item of equipment is placed in continuous service before Final Acceptance of all the Work, the correction period for that part of the Work or that item may start to run from an earlier date if so provided by Contract Modification. Such use of part of the Work before final acceptance shall in no case be construed as constituting acceptance of the work or any part thereof and shall neither relieve Contractor of any of its responsibilities under the Contract nor act as a waiver by County or Construction Manager of any of their legal rights.
5. Where defective 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 will be extended for an additional period of the longer of one year after such correction or removal and replacement has been satisfactorily completed, or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special warranty or guaranty required by the Contract Documents or supplied with regard to the Work or required by any specific provisions of the Contract Documents.

D. ACCEPTANCE AND CORRECTION OF DEFECTIVE WORK BY COUNTY

1. If after giving Contractor the opportunity to repair it fails to do so, County may accept defective Work: If, instead of requiring correction or removal and replacement of defective Work, County prefers to accept it, County may do so. Contractor shall pay all claims, costs, losses and damages attributable to County's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to final payment, a change order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, unless the parties are unable to agree upon an appropriate decrease in the Contract Price, in which case County may deduct from monies due Contractor the amount of any and all claims, costs, losses (including diminution in value), damages, expenses and liabilities attributable to the defective work. If Contractor disagrees with the deduction, Contractor may make a Claim as provided in Paragraph 1.12 of these General Conditions. If the acceptance occurs after Final Payment, Contractor shall pay to County an appropriate amount as determined by County.
2. County may correct defective Work: If Contractor fails within **five (5) business days** after written notice from County or Construction Manager to begin to correct defective Work or to begin to remove and replace rejected Work as required by Construction Manager in accordance with Paragraph 1.09.C.2 of these General Conditions, or to provide a plan for correction of defective Work acceptable to County, or if Contractor otherwise fails to perform the Work in accordance with Contract Documents, County may, after **seven (7) business days** written notice to Contractor, correct and remedy any deficiency. In connection with such corrective and remedial action, County may exclude Contractor from

all or part of the site, take possession of all or part of the Work, and suspend Contractor's work related thereto, take possession of all or part of Contractor's tools, appliances, construction equipment and machinery at the site, and incorporate in the Work any materials and equipment stored at the site or for which County has paid Contractor but which are stored elsewhere. Contractor shall allow County, its representatives, agents, employees, consultants and other contractors access to the site to enable County to exercise the rights and remedies under this paragraph. All claims, costs, losses (including diminution in value), damages, expenses and liabilities incurred or sustained by County in exercising such rights and remedies will be the responsibility of Contractor and a change order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and the Contract Price. If the parties are unable to agree on the amount of an appropriate decrease in the Contract Price, County may deduct from monies due Contractor all claims, costs, losses (including diminution in value), expenses, damages and liabilities attributable to the defective Work, including all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. If Contractor disagrees with County's calculation, it may make a Claim as provided in Paragraph 1.12 of these General Conditions.

E. RIGHTS UPON INSPECTION OR CORRECTION

1. Contractor shall not be allowed an extension of the Contract Time (or any milestones) because of any delay in the performance of the Work attributable to the exercise by County of its rights and remedies under this Paragraph. Where County exercises its rights under this Paragraph, it retains all other rights it has by law or under the Contract Documents, including but not limited to, the right to terminate the Contract and/or make a claim or back charge where a change order cannot be agreed upon.
2. Inspection 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 or otherwise shall not operate to waive County's right to require full compliance with the Contract Documents and shall in no way be deemed as acceptance of the Work paid therefor. Contractor's obligation to complete the Work in accordance with the Contract Documents shall be absolute, unless County agrees otherwise in writing.

F. SAMPLES AND TESTS OF MATERIALS AND WORK

1. Samples or test specimens of all materials to be used or offered for use in connection with the Work shall be prepared at the expense of Contractor and furnished to Construction Manager in such quantities and sizes as may be required for proper examination, analysis and tests.
2. All samples shall be submitted in ample time to enable Construction Manager to make any tests, analyses or examinations necessary before the time at which it is desired to incorporate the material into the Work.
3. Construction Manager may refuse consideration of further samples of same brand or make of material or product previously determined as unsatisfactory for testing, analysis or examination.

G. PROOF OF COMPLIANCE WITH CONTRACT PROVISIONS

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

H. ACCEPTANCE

Neither inspection by County or its authorized agents or representatives, nor any order or certificate for the payment of money, nor acceptance of the whole or any part of the Work by County, nor any extension of time, nor any position taken by County or its authorized agents or representatives shall operate as a waiver of any provisions of this Contract, or of any power herein reserved by County or any right to damage herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other subsequent breach. Payments shall not constitute acceptance of the work or of any portion thereof, whether or not the unsatisfactory character of such Work or material was apparent or detected at the time such payment was made.

1.10 CONTRACTOR'S ORGANIZATION AND EQUIPMENT

A. CONTRACTOR'S LEGAL ADDRESS

The address and telecopy number given in Proposal is hereby designated as the legal address and telecopy number of Contractor. This address and/or number may be changed at any time by notice in writing, delivered to County, which in conspicuous language advises County of a change in legal address or telecopy number. Delivery of any drawing, notice, letter or other communication 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 postpaid wrapper, directed to Contractor at its legal address, shall be deemed legal and sufficient service upon Contractor. Telecopy to Contractor's designated telecopy number of any letter, memorandum, or other communication on standard or legal sized paper, with proof of telecopy transmission, shall also be deemed legal and sufficient service upon Contractor.

B. CONTRACTOR'S OFFICE AT THE WORK SITE

If necessary to properly perform the work, Contractor shall maintain an office at the site, which office shall be the headquarters of Contractor's representatives authorized to transmit and receive instructions, drawings or other communications to and from Construction Manager. Instructions, drawings, or other communications given to Contractor's representative or delivered at the site office in the representative's absence shall be deemed to have been given to Contractor.

C. CONTRACTOR'S SUPERINTENDENTS OR FOREPERSONS

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 may be given to them by Construction Manager. Contractor shall be liable for faithful observance of instructions delivered to Contractor or to its authorized representative or representatives on site.

D. PROFICIENCY IN ENGLISH

Supervisors, forepersons, security guards, safety personnel and employees who have unescorted access to the Site must 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

E. CONTRACTOR'S EMPLOYEES

Contractor and its subcontractors shall employ only competent and skilled personnel to do work. If Construction Manager shall notify Contractor that any person on the Work is incompetent, unfaithful or disorderly, or refuses to carry out provisions of the Contract, or uses threatening or abusive behavior or language to any person on the Work, or violates sanitary rules, or is otherwise unsatisfactory, and if Construction Manager requests that such person be discharged from the work, then such person shall be immediately discharged from the Work and shall not be employed again on it except with the written consent of Construction Manager.

F. CONTRACTOR TO SUPPLY SUFFICIENT WORKERS AND MATERIALS

1. Unless otherwise required by County pursuant to the terms of the Contract Documents, Contractor shall at all times keep on the premises a sufficient amount of equipment and materials and employ a sufficient number of qualified workers to prosecute the Work at a rate and in a sequence and manner necessary to complete the Work within the Contract Times. This obligation shall remain in full force and effect notwithstanding disputes or claims of any type.
2. Should Contractor at any time during progress of the Work refuse, neglect, or be unable to supply sufficient equipment, materials or qualified workers to prosecute the Work as required, then upon receipt of notice to that effect from Construction Manager, County or its designee, Contractor shall, at no cost to County, accelerate the Work and/or furnish additional qualified workers or equipment or materials as may be necessary to timely perform the Work. If Contractor does not comply with notice from Construction Manager, County or County's designee, within **three (3) business days** of date of service thereof, shall have the right but not a duty to provide equipment, materials and qualified workers to finish the Work or any affected portion of the Work, as County may elect. Sums necessary to meet expenses thereby incurred by County shall be deducted from monies due or that may thereafter become due under the Contract, and paid to persons supplying equipment or materials or doing work. Such payments shall be deducted from funds or appropriations set aside for purposes of the Contract and charged to Contractor as if paid to Contractor. Contractor shall remain liable for resulting delay, including liquidated damages and indemnification of County, Construction Manager and their respective officers, directors, agents, representatives, consultants and employees from claims of others.
3. Exercise by County or Construction Manager of the rights conferred upon them in subparagraph 2, above, is entirely discretionary on the part of County and Construction Manager. Neither County nor Construction Manager shall have any duty or obligation to exercise the rights referred to in subparagraph 2, above, and the failure to exercise such rights shall not be deemed an approval of existing work progress or a waiver or limitation of County's or Construction Manager's right to exercise such rights in other concurrent or future similar circumstances. The rights conferred upon County and Construction Manager under subparagraph 2, above, are cumulative to County's other rights under the Contract Documents including, but not limited to, County's rights to terminate the Contract.
4. County may, if it deems necessary for reasons other than as described in Subparagraph 1.10(F)(2) of these General Conditions, direct Contractor to accelerate the Work by increasing crew sizes, working overtime (as permitted bylaw) and/or performing shift work. If directed to perform overtime and/or shift work, Contractor will work such overtime and/or shift work, and County shall pay Contractor solely for the additional

premium wages paid, plus taxes imposed by law on such additional wages. Unless otherwise directed by County, accelerated work shall be performed utilizing the most cost-effective available method. For example, County shall not be responsible to pay the premium for overtime work if the same work could have been performed on second shift utilizing a lower premium.

G. CONTRACTOR TO LIST TRADES WORKING

To assist inspectors and Construction Manager, Contractor shall list on a daily basis what trades are working on the site (employees and Subcontractors) and their scheduled activities.

1.11 EXECUTION AND PROGRESS OF THE WORK

A. SCHEDULES AND EXAMINATION OF CONTRACT DOCUMENTS

1. Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements and all actual conditions.
2. Contractor shall submit to Construction Manager for review:
 - a. Progress schedules as required by **Division 01 General Requirements Sections 01 33 00 (Submittal Procedures)** and **01 3200 (Construction Progress Documentation)**.
 - b. A preliminary schedule of shop drawings and submittals that lists each required submittal and the times for submitting, reviewing and processing such submittal, as set forth in **Paragraph 1.05(J)1** above.
 - c. A preliminary schedule of values for all the Work, as required by subparagraph 1.11.C below and as required by **Division 01 General Requirements Section 01 29 00 (Payment Procedures)**.
3. Unless otherwise provided in the Contract Documents, at least **fifteen (15) days** before submission of the second Application for Payment Construction Manager will hold a conference attended by Contractor and others as appropriate to review for acceptability the schedules submitted in accordance with the above subparagraph 2. Contractor shall have an additional **fifteen (15) days** to make corrections and adjustments and to complete and resubmit the schedules. Schedules shall be updated and completed as required by **Division 01 General Requirements Sections 01 29 00 (Payment Procedures), 01 33 00 (Submittal- Procedures)** and **01 3200 (Construction Progress Documentation)**. No progress payment shall be due or owing to Contractor after the first Application for Payment until the schedules are submitted to and acceptable to Project Manager as provided in those Sections. Project Manager's acceptance of Contractor's schedules will not create any duty of care or impose on County or Project Manager any responsibility for the sequencing, scheduling or progress of Work nor will it relieve Contractor from Contractor's full responsibility therefor.

B. PROGRESS SCHEDULE AND REPORTS

1. Contractor shall submit to Construction Manager all schedules and reports as specified in **Division 01 General Requirements Section 01 32 00 (Construction Progress Documentation)**.

2. The characteristics, format and detail of the Progress Schedule shall be reviewed by Construction Manager and evaluated for conformance with the contract duration specified, the requirements contained herein, and the sufficiency of detail to enable monitoring of the Work, under the Contract Documents and coordinating with that of other contractors. Contractor shall participate in the review and evaluation of the Progress Schedule and analysis as required.
3. Contractor shall utilize the Progress Schedule in planning, scheduling, coordinating, performing and controlling the work (including all activities of Subcontractors, subconsultants, assigned contractors, equipment vendors and suppliers).
4. Contractor shall update the Progress Schedule on a monthly basis for purpose of recording and monitoring the progress of the Work and evaluating and preparing Contractor's monthly progress payments.

C. SCHEDULE OF VALUES

Contractor shall submit to Construction Manager for review, a preliminary Schedule of Values for all the Work as required by **Division 01 General Requirements Section 01 29 00 (Payment Procedures)**, which will include quantities and prices of items aggregating the Contract Price and will be subdivided into component activities in sufficient detail to serve as the basis for progress payments during construction. Such Schedule of Values shall include an appropriate amount of overhead and profit applicable to each item of work, and shall conform to **Section 01 29 00 (Payment Procedures)**.

D. PROGRESS MEETINGS

1. Construction Manager will schedule, administer and preside over weekly Progress Meetings throughout the duration of the Work. Meetings shall be held at Contractor's on-site office unless otherwise directed by Construction Manager. Progress Meetings shall be attended by Contractor's job superintendent, major subcontractors, subconsultants and suppliers, Construction Manager and others as appropriate to agenda topics for each meeting.
2. At the weekly Progress Meetings, Construction Manager will receive and distribute all submittals, shop drawings, samples, payment applications, change orders, requests for change orders, requests for proposals and all correspondence relating to performance of the Work. Agenda will contain the following items as appropriate:
 - a. Review of work progress.
 - b. Status of Progress Schedule, adjustments.
 - c. Submittals.
 - d. Delivery schedules.
 - e. Utility shutdowns, traffic disruptions, and other interferences.
 - f. Quality control.
 - g. Pending changes.
 - h. Substitutions.
 - i. Review of Contractor's safety program activities and results, including report on all serious injury and/or damage accidents.
 - j. Other items affecting progress of work.
3. Special meetings may be held without advance notice in emergency situations.

E. LINES AND GRADES, MEASUREMENTS

1. Work shall be done to lines and grades established by Contractor at Contractor's cost in accordance with the Contract Documents, unless Construction Manager, in his or her discretion, directs otherwise.
2. At the request of Construction Manager, Contractor shall, without charge, provide workers from Contractor's force, and equipment and materials, to assist Construction Manager temporarily in making measurements and surveys and in establishing temporary or permanent reference marks.
3. At times it may be necessary to discontinue portions of Contractor's work in order for Construction Manager to make measurements or surveys without interruptions or other interference that might impair accuracy of results. At any time, on request of Construction Manager, Contractor shall discontinue the Work to such extent as may be necessary for purposes of Construction Manager.

F. COST DATA

1. Contractor shall maintain full and correct information as to the number of workers employed in connection with each subdivision of the Work, classification and rate of pay of each worker in the form of certified payrolls, cost to Contractor of each class of equipment used by Contractor in the Work, and amount of each class of materials used in each subdivision of the Work. Contractor shall provide Construction Manager with monthly summaries of this information. If Contractor maintains summaries or reports comparing actual project costs with Proposal estimates or any budgets, it shall provide Construction Manager with a copy of such report whenever it is generated or whenever it is requested by or on behalf of County.
2. Contractor shall maintain daily job reports recording all significant activity on the job, including the number of workers and specific equipment on site, work activities, problems encountered and delays. Contractor shall maintain copies of all correspondence with subcontractors and subconsultants and records of meetings with subcontractors and subconsultants. Contractor shall provide daily job reports as required by County or as specified in **Division 01 General Requirements Section 01 32 00 (Construction Progress Documentation)**. Contractor shall report to the Surety promptly upon receiving requests from the Surety to provide reporting.
3. County shall have the right to audit Contractor's books and records and to inspect the site, including the trailer of Contractor and its subcontractors and subconsultants, or other jobsite office. This requirement shall be contained in the subcontracts of subcontractors and subconsultants working on site. County shall have the right to inspect and obtain copies of the following documents at all times: all Contract Documents, all planning and design documents, all Bid proposal and negotiation documents, all design documents and modification proposals, all value engineering or other cost reduction proposals, all revisions made to the design, and all job progress reports and photographs.
4. 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 changes made during construction. These record documents together with all approved samples and a counterpart of all approved submittals and Shop Drawings shall

be maintained and be available to Construction Manager for reference. Upon completion of the Work, these record documents, samples, submittals and shop drawings shall be delivered to Construction Manager.

5. County shall have the right to inspect all information and documents maintained under this provision at any time during the Project and for a period of five years following Completion. 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.
6. Pursuant to Government Code section 8546.7, the Contract shall be subject to the examination and audit of the State Auditor, at the request of County or as part of any audit of County, for a period of three years after final payment under the Contract. The examinations and audits under this paragraph shall be confined to those matters connected with the performance of the Contract, including but not limited to the costs of administering the contract.

1.12 CLAIMS BY CONTRACTOR

A. GENERAL

1. Should any dispute arise under this Contract with respect to the true value of any Work performed, of any Work omitted, of any extra Work which Contractor may be required to perform, time extensions, the size of any payment to Contractor during the performance of this Contract, or of compliance with Contract Documents or procedures, the dispute will be decided by County and its decision shall be final and conclusive. If Contractor should disagree with County's decision, Contractor's sole and exclusive remedy is to file a Claim in accordance with this Paragraph. Notwithstanding and pending the resolution of any dispute, Contractor shall diligently prosecute the Work, including the disputed Work, to final completion. The provisions of this Paragraph shall survive termination or completion of this Contract. Contractor shall bear all costs incurred in the preparation and submission of a Claim.
2. "Claim" means a written demand or written assertion by Contractor seeking, as a matter of right, the payment of money, the adjustment of the Contract Time, the adjustment or interpretation of Contract terms, or other relief arising under or relating to the Contract Documents. With respect to any claims for compensable delay caused by or attributed to County, the daily rate shall be limited to the "Daily Rate Amount" set forth in the Bid Form. In order to qualify as a "claim," the written demand must state that it is a Claim submitted under Paragraph 1.12 of these General Conditions.
3. A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a Claim under the Contract. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a Claim under the Contract by submitting a separate Claim in compliance with Claim submission requirements.

B. PROCEDURE

1. Should any clarification, determination, action or inaction by County, site condition, or any other event of any kind or nature whatsoever, in the opinion of Contractor, exceed the scope of or not comply with the Contract Documents, or otherwise result in Contractor seeking additional compensation (collectively "disputed Work"), then Contractor and County shall

make good faith attempts to resolve any and all such claims and disputes. Before commencing the disputed Work, or within **seven (7) days** after a dispute has arisen or a demand is made or instruction is given, whichever is earlier, Contractor must file written notice of disputed Work with Construction Manager stating clearly and in detail reasons for contending the disputed Work exceeds the requirements of the Contract Documents. If a written notice is not issued within this time period, or if Contractor proceeds with the disputed Work without first having given the notice required by this paragraph, Contractor shall waive its rights to further claim on the specific issue.

2. County will review Contractor's timely notice of disputed Work and provide a decision. If, after receiving the decision, Contractor disagrees with it or still considers the Work required of it to be outside of the requirements of the Contract, it shall so notify Construction Manager, in writing, within **seven (7) days** after receiving the decision, that a formal Claim will be issued. Within **thirty (30) days** of receiving the decision, Contractor shall submit its Claim and all arguments, justification, cost or estimates, schedule analysis, and detailed documentation supporting its position. Failure to furnish notification within **seven (7) days** and all justifying documentation within **thirty (30) days** will result in Contractor waiving its right to the subject Claim. If disputed Work persists longer than **thirty (30) days**, Contractor shall, every **thirty (30) days** until the disputed Work is completed, submit to County a document titled "Claim Update" which shall update and quantify all elements of the Claim. Failure to submit a Claim Update or to quantify costs every **thirty (30) days** shall result in waiver of the Claim for that **thirty (30) day** period. Claims or Claim Updates stating that damages will be determined at a later date shall not comply with this paragraph and shall result in Contractor waiving its Claim.
3. Upon receipt of Contractor's Claim including all arguments, justifications, cost or estimates, schedule analysis, and documentation supporting its position as previously described, County or its designee will review the issue and render a final determination. If Contractor's Claims at project completion total or less than \$375,000, then Claims resolution shall proceed in the manner prescribed by Public Contracts Code section 20104 *et seq.* See also **Division 01 General Requirements Section 01 41 00 (Regulatory Requirements)**.
4. Claims shall be calculated in the same manner as Change Orders. EXCEPT WHERE PROVIDED BY LAW, COUNTY SHALL NOT BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES, AND CLAIMS SHALL NOT INCLUDE SPECIAL OR CONSEQUENTIAL DAMAGES.

C. CERTIFICATION

1. Contractor, under penalty of perjury under the laws of the State of California, shall submit with the Claim its and its subcontractors' and subconsultants' certification that:
 - a. The Claim is made in good faith;
 - b. Supporting data are accurate and complete to the best of Contractor's knowledge and belief; and
 - c. The amount requested accurately reflects the Contract adjustment for which Contractor believes County is liable.
2. The certification shall be executed by an officer or general partner of Contractor having overall responsibility for the conduct of Contractor's affairs.

3. If a false claim is knowingly submitted (as the terms “claim” and “knowingly” are defined in the California False Claims Act, California Government Code §12650 et seq.), County will be entitled to the remedies set forth in the California False Claims Act in addition to all other remedies provided by law. Contractor may be subject to criminal prosecution.
4. In regard to any Claim or portion of a Claim for subcontractor or subconsultant work, Contractor shall fully review said Claim and certify said Claim, under penalty of perjury under the laws of the State of California, to have been made in good faith and in accordance with this Contract.
5. Failure to furnish certification as required hereinbefore will result in Contractor waiving its right to the subject Claim.

D. CLAIM FORMAT

1. Contractor shall submit the Claim and all support therefor in the following format:
 - a. Cover letter and certification.
 - b. Summary of Claim including
 - 1) Underlying Facts
 - 2) Entitlement
 - 3) Quantum Calculations
 - 4) Contract Provisions Supporting Relief
 - c. List of documents relating to Claim:
 - 1) Specifications
 - 2) Drawings
 - 3) Clarifications/Requests For Information
 - 4) Schedules
 - 5) Other
 - d. Chronology of Events And Correspondence.
 - e. Analysis of Claim Merit.
 - f. Analysis of Claim Cost.
 - g. Attachments:
 - 1) Specifications.
 - 2) Drawings.
 - 3) Clarifications/Requests for Information.
 - 4) Correspondence.
 - 5) Schedules.
 - 6) Other.

E. EXCLUSIVE REMEDY

1. Contractor’s performance of its duties and obligations specified in this Paragraph and submission of a Claim as provided in this Paragraph is Contractor’s sole and exclusive

remedy for the payment of money, extension of time, the adjustment or interpretation of Contract terms or other contractual or tort relief arising from this Contract. This exclusive remedy and the limitation of liability (expressed above and elsewhere in the Contract Documents) apply notwithstanding the completion, termination, suspension, cancellation or rescission of the Work or this Contract, negligence or strict liability by County, its representatives, consultants or agents, or the transfer of the Work or the Project to County for any reason whatsoever. Contractor waives all claims of waiver, estoppel, release, bar, or any other type of excuse for non-compliance with the claim submission requirements.

2. Compliance with the notice and Claim submission procedures described in this Paragraph is a condition precedent to the right to commence litigation, file a Government Code Claim, or commence any other legal action. Any Claim or issue that is not submitted under this Paragraph in a timely manner may not be asserted in any Government Code Claim, subsequent litigation, or legal action.

F. MEDIATION

NOT USED

1.13 LEGAL AND MISCELLANEOUS

A. LAWS AND REGULATIONS

Contractor shall keep fully informed of and shall comply with all statutes, laws, ordinances, codes, regulations, rules and orders of any properly constituted authority affecting the Contract, the Work, and persons connected with the Work, and Contractor shall defend and indemnify those identified in Subparagraph 1.13.C.2 of these General Conditions from the claims, suits, actions, losses and liabilities identified therein, including those arising from or based on a violation of statute, law, ordinance, code, regulation, rule or order, whether by Contractor or by its subcontractors, subconsultants, employees or agents. Authorized persons may at any time enter upon any part of the Work to ascertain whether statutes, laws, ordinances, codes, regulations, rules or orders are being complied with.

B. PERMITS AND TAXES

1. County shall procure all necessary permits issued by the City of Jackson and County of Amador, licenses, pay all charges, taxes and fees, including fees for street opening permits, except for fire sprinkler permit, if any, which shall be paid for and picked up by Contractor. If the Project is within the city limits of Jackson, Contractor shall secure a City of Jackson business license, and give all notices necessary and incident to due and lawful prosecution of Work, unless otherwise provided herein.
2. Contractor shall pay all sales taxes levied on materials, supplies, or equipment purchased and used on or incorporated into the Work, and all other taxes properly assessed against equipment or other property used in connection with the Work.
3. Contractor shall make necessary arrangements with proper authorities having jurisdiction over roads, streets, pipelines, Underground Facilities, navigable waterways, railroads and other works in advance of operations, even though permits for the Work may have already been obtained by County.

C. RESPONSIBILITY OF CONTRACTOR AND INDEMNIFICATION

1. County and all of its officers, directors, representatives, agents, consultants, and employees associated with the Work, including, but not limited to, Project Manager, the Construction Manager, and each representative of County, including their officers, directors, representatives, agents, consultants, and employees, respectively, shall not be liable or accountable in any manner for:
 - a. loss or damage of any type that may happen to the Work or any part thereof,
 - b. loss or damage of any type to materials or other things used or employed in performing the Work;
 - c. injury, sickness, disease, or death of any person, including, but not limited to, workers and the public; or
 - d. damage of any type to property; resulting from any cause whatsoever except their sole negligence or active negligence, attributable to the performance or character of the Work, and Contractor releases said parties from any and all such claims.
2. To the furthest extent permitted by California Civil Code Section 2782, Contractor shall assume the defense of, and indemnify, and hold harmless County, Project Manager, the Construction Manager and all of their officers, directors, representatives, attorneys, agents, consultants and employees from claims, suits, actions, losses and liability of every kind, nature and description, including but not limited to attorneys' fees, 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, omission or negligence of Contractor, subcontractors, subconsultants, any one directly or indirectly employed by any of them or any one for whose acts any of them may be liable, regardless of whether it is caused in part by the act, omission or negligence of any party required to be indemnified hereunder.
3. With respect to third party claims against Contractor, Contractor waives any and all rights to any type of express or implied indemnity against any party required to be indemnified hereunder.
4. Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of Contractor, its subcontractors or subconsultants of any tier, or the officers, representatives or agents of any of them.
5. To the furthest extent permitted by Civil Code Section 2782, the indemnities, releases of liability, limitations of liability, and limitations of remedy expressed throughout this Contract shall apply even in the event of breach of Contract, negligence (active or passive), fault or strict liability of the party indemnified, released, or limited in liability or remedy. If Contractor fails to perform any of these defense or indemnity obligations, County may in its discretion back charge Contractor for its costs and damages resulting therefrom and withhold such sums from progress payments or other contract monies which may otherwise become due.

D. NOTICE OF CONCEALED OR UNKNOWN CONDITIONS

1. Before commencing the Work, Contractor shall review all information available regarding subsurface conditions, including but not limited to, information supplied by County. Subject to the terms and conditions of these documents, Contractor shall also contact Underground Service Alert ("USA") and secure from it all information in its possession

regarding underground conditions, including Underground Facilities at the Site. Contractor is charged with knowledge of all subsurface conditions reflected in USA records. Prior to commencing excavation or trenching work, Contractor shall provide County with copies of all USA records secured by Contractor. Contractor shall advise County of any conflict between information provided by County and that provided by USA records.

2. If either of the following conditions is encountered at the site, Contractor shall give notice in writing to Construction Manager promptly before conditions are disturbed (except in an emergency as required by subparagraph 1.16.D of these General Conditions), and in no event later than **seven (7) days** after first observance of-
 - a. Subsurface or latent physical conditions that differ materially from those indicated in the Contract Documents and other information provided by County or available to Contractor upon a reasonable inspection.
 - b. Unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in Contract Documents.
3. In response to Contractor's written notice, Construction Manager 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, Construction Manager will issue a change order under the procedures described in the Contract Documents.
4. If Construction Manager determines that physical conditions at the site are not latent or are not materially different from those indicated or that no change in terms of Contract is justified, Construction Manager shall so notify Contractor in writing, stating reasons. If County and Contractor do not agree on an adjustment in Contract Price or Contract Time, Contractor shall proceed with Work as directed by Construction Manager and may file a Claim as provided for in Paragraph 1.12 of these General Conditions.
5. Contractor shall not be entitled to any adjustment in the Contract Price or Time regarding claimed latent or materially different site conditions if:
 - a. Contractor knew of the existence of such conditions at the time Contractor submitted its Proposal or signed the Contract; or
 - b. Contractor should have known of the existence of such condition as a result of having fully complied with the requirements of Subparagraph 1.01.A.1 of these General Conditions; or
 - c. The information or conditions claimed by Contractor to be latent or materially different consist of information, conclusions, opinions or deductions of the kind referred to or prohibited by Subparagraph 1.01.A.2, 1.01.A.3, or 1.01.A.5 of these General Conditions; or
 - d. Contractor failed to give written notice within the time as required by Subparagraph 1.13.D.2 of these General Conditions.

6. If County and Contractor are unable to agree on entitlement to or as to the amount or length of any adjustment in the Contract Price or Contract Time required under this paragraph, Contractor may make a Claim as provided in Paragraph 1.12 of these General Conditions.
7. The cost of all of the following will be included in the Contract Price and Contractor shall have full responsibility for:
 - a. Reviewing and checking all available information and data, including but not limited to, information supplied by County and information on file at USA;
 - b. Locating all Underground Facilities shown or indicated in 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 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 Work.
8. If an Underground Facility is uncovered or revealed at or contiguous to the site that was not shown or indicated in the materials supplied by County or in information on file at USA, Contractor shall, promptly after becoming aware thereof and before FURTHER disturbing conditions affected thereby (and in no event later than **seven (7) days**), and prior to performing any Work in connection therewith (except in an emergency as required by Subparagraph 1.16.D of these General Conditions), identify the owner of such Underground Facility and give written notice to that owner and to Construction Manager. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
9. Contractor shall be allowed an increase in the Contract Price 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 County only where the Underground Facility:
 - a. Was not shown or indicated in the Contract Documents or in the information supplied by County, or in information on file at USA; and
 - b. Contractor did not know of it; and
 - c. Contractor could not reasonably have been expected to be aware of it or to have anticipated it from a reasonable investigation of 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 a change order will not be due, even if the Underground Facility was not indicated in the Contract Documents or in the information supplied to Contractor by County or in information on file at USA.)
10. County assumes responsibility for the general accuracy of information regarding the location of Underground Facilities if (a) County owns the Underground Facility, or (b) County's consultant developed the information. This express assumption of responsibility only applies if Contractor has conducted the required independent investigation (see Subparagraph 1.01.A.1 of these General Conditions) and discrepancies were not apparent.

Except for this express assumption of responsibility, County does not accept responsibility for any other aspect of Underground Facility information shown or obtained by Contractor, its completeness, or Contractor's conclusions or deductions drawn from this information. Underground Facilities are inherent in construction involving digging of trenches or other excavations and Contractor is to apply its skill and industry to verify the information available.

E. NOTICE OF HAZARDOUS WASTE OR MATERIALS CONDITIONS

1. Notice by Contractor shall be given in writing to Construction Manager promptly, before any of the following conditions are disturbed, and in no event later than 24 hours after first observance, of any:
 - a. material that Contractor believes may be hazardous waste or hazardous material (as defined in Section 25117 of the Health and Safety Code) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law; or
 - b. other material that may present a substantial danger to persons or property exposed thereto in connection with the Work at the site.
2. Contractor's written notice shall indicate whether the hazardous waste or material was shown or indicated in the Contract Documents to be within the scope of the Work, and whether the materials were brought to the site by Contractor, its Subcontractors, subconsultants, suppliers, or anyone else for whom Contractor is responsible. As used in this section the term "hazardous materials" shall include without limitation asbestos, lead, PCBs, petroleum and related hydrocarbons, and radioactive material.
3. In response to Contractor's written notice, Construction Manager shall promptly investigate the identified conditions, and if finding that conditions do involve hazardous waste or hazardous materials that cause a decrease or increase in Contractor's cost of, or time required for, performance of any part of the Work, Construction Manager will issue a change order under the procedures required by the Contract Documents.
4. If Construction Manager determines that conditions do not involve hazardous materials or that no change in the terms of the Contract is justified, Construction Manager shall so notify Contractor in writing, stating reasons. If County and Contractor cannot agree on an adjustment in Contract Price or Contract Time, Contractor shall proceed with the Work as directed by Construction Manager and may file a Claim as provided under Paragraph 1.12 of these General Conditions.
5. If Contractor does not agree to resume the Work based on a reasonable belief it is unsafe after receipt of notice from Construction Manager, or does not agree to resume the Work under special conditions, then County may order such portion of the Work that is in connection with such hazardous condition or such affected area to be deleted from the Work, or performed by others, or County may invoke its rights to terminate the Contract in whole or in part. County will determine entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Time as a result of deleting such portion of the Work, or performing the Work by others. If Contractor does not agree with County's determination, it may make a Claim therefore as provided in Paragraph 1.12 of these General Conditions.

6. If Contractor stops the Work in connection with any hazardous condition and in any area affected thereby, Contractor shall immediately redeploy its workmen, equipment and materials, as necessary, to other portions of the Work to minimize delay and disruption.

F. SUSPENSION OF WORK

1. County may, without cause, order Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as County may determine.
2. An adjustment shall be made for increases in cost of performance of the Contract caused by any such suspension, delay or interruption. No adjustment shall be made to extent that:
 - a. performance is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor is responsible; or
 - b. an equitable adjustment is made or denied under another provision of Contract; or
 - c. the suspension of the Work was the direct or indirect result of Contractor's failure to perform any of its obligations under the Contract Documents.
3. Adjustments made in cost of performance may have a mutually agreed fixed or percentage fee.

G. TERMINATION OF CONTRACT FOR CAUSE; WRITTEN ASSURANCES OF PERFORMANCE

1. Contractor shall be in default of this Contract and County may terminate Contractor's right to proceed under the Contract Documents, for any of the following causes:
 - a. Should Contractor make an assignment for the benefit of creditors, admit in writing its inability to pay its debts as they become due, file a voluntary petition in bankruptcy, be adjudged a bankrupt or insolvent, file a petition or answer seeking for itself any reorganization, arrangement, composition, readjustment, liquidation, dissolution, or similar relief under any present or future statute, law, or regulation, file any answer admitting or not contesting the material allegations of a petition filed against Contractor in any such proceeding, or seek, consent to, or acquiesce in, the appointment of any trustee, receiver, custodian or liquidator of Contractor or of all or any substantial part of the properties of Contractor, or if Contractor, its directors or shareholders, take action to dissolve or liquidate Contractor; or
 - b. Should Contractor commit a breach of this Contract and not cure such failure within **ten (10) days** of the date of notice from County to Contractor demanding such cure; or, if such failure 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 Contractor to avail itself of a time period in excess of **ten (10) day** period, Contractor must provide to County within the **ten (10) day** period a written plan acceptable to County to cure the breach, and then diligently commence and continue such cure according to the written plan.); or
 - c. Should Contractor violate or allow a violation of any valid law, statute, regulation, rule, ordinance, permit, license or order of any governmental agency applicable to

the Project or the Work, and does not cure such violation within **ten (10) days** of the date of the notice from County to Contractor demanding such cure; or, if such failure 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 Contractor to avail itself of a time period in excess of **ten (10) day** period, Contractor must provide to County within the **ten (10) day** period a written plan acceptable to County to cure the violation, and then diligently commence and continue such cure according to the written plan.)

2. If County at any time reasonably believes that Contractor is or may be in default under the Contract, as defined above, County may in its sole discretion notify Contractor in writing of this fact and request written assurances from Contractor of performance of the Contract and a written plan to remedy any such defaults. Failure of Contractor to provide written assurances of performance as required herein will constitute a material breach of the Contract sufficient to allow County to invoke Paragraph 1.13.G.1.b above.
3. In event of termination for cause, County shall immediately serve written notice thereof upon Surety and Contractor. Surety shall have the rights and obligations set forth in the Performance Bond. Subject to the Surety's rights under the Performance Bond, County may take over the Work and prosecute it to completion by contract or by any other methods it may deem advisable.
4. In the event of termination by County as provided in Paragraph 1.13.G.1.b above for cause,
 - a. County shall compensate Contractor for the value of the Work delivered to County upon termination as determined in accordance with the Contract Documents, subject to all rights of offset and backcharges, and provided that Contractor provides County with updated as-built drawings and project record documents showing the Work performed up to the date of termination. However, County shall not compensate Contractor for its costs in terminating the Work or any cancellation charges owed to third parties; and
 - b. Contractor shall deliver to County possession of the Work in its then condition, including but not limited to all designs, engineering, project records, cost data of all types, Drawings and Specifications and contracts with vendors, subcontractors and subconsultants, and 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 have salvage value only at the end of the construction period. 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 Paragraph shall not be interpreted to diminish any right that County may have to claim and recover damages for any breach of this Contract, but rather, Contractor shall compensate County for all loss, cost, damage, expense, and/or liability suffered by County as a result of such termination and failure to comply with the Contract Documents.
5. In the event a termination for cause is determined to have been made wrongfully or without cause, then the termination shall be treated as a termination for convenience and Contractor shall have no greater rights than it would have had if a termination for convenience had been effected. Any Contractor claim arising out of a termination for default shall be made in accord with the provisions of the Contract Documents on Claims and calculated in accordance with the provisions of the Contract Documents on change orders and Claims.

No other loss, cost, damage, expense or liability may be claimed, requested or recovered by Contractor.

H. TERMINATION OF CONTRACT FOR CONVENIENCE

1. County may terminate performance of the Work under the Contract in accordance with this clause in whole, or from time to time in part, whenever County shall determine that termination is in the best interest of County. Termination shall be effected by delivery to Contractor of notice of termination specifying the extent to which performance of the Work under the Contract is terminated, and the date upon which the termination becomes effective.
2. After receipt of a notice of termination, and except as otherwise directed by County, Contractor shall:
 - a. Stop the Work under the Contract on the date and to the extent specified in the notice of termination;
 - b. Place no further orders or subcontracts for materials, services, or facilities except as necessary to complete the portion of the Work that is not terminated;
 - c. Terminate by notice of termination all orders and subcontracts to the extent that they relate to performance of terminated Work. Before such termination, however, Contractor shall provide County with an estimate of the remaining Contract value and cost of completion of the orders or subcontracts;
 - d. Assign to County in the manner, at the times, and to the extent directed by County, all right, title, and interest of Contractor under orders and subcontracts so terminated. County shall have the right, but not the duty, in its discretion, to settle or pay any or all claims arising out of termination of orders and subcontracts;
 - e. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with approval or ratification of County to the extent County may require. County's approval or ratification shall be final for purposes of this clause;
 - f. Transfer title to County, and deliver in the manner, at the times, and to the extent, if any, directed by County, fabricated or unfabricated parts, Work in process, completed Work, supplies, and other material produced as part of, or acquired in connection with performance of, terminated Work, and completed or partially completed plans, drawings, information, and other property that, if the Contract had been completed, would have been required to be furnished to County;
 - g. Use its best efforts to sell, in the manner, at the times, to the extent, and at the price or prices that County directs or authorizes, any property of types referred to in Subparagraph 2.f. above, but Contractor shall not be required to extend credit to any purchaser, and may acquire any such property under conditions prescribed and at the price or prices approved by County. Proceeds of transfer or disposition shall be applied in reduction of payments to be made by County to Contractor under the Contract or shall otherwise be credited to the price or cost of Work covered by Contract or paid in such other manner as County may direct;

of the Contract and the Drawings and Specifications, and excessive actual cost shall be disallowed.

- 3) Reasonable allowance for profit on cost of Work performed as determined under Subparagraph 1), provided Contractor establishes to the satisfaction of County that Contractor would have made a profit had the Contract been completed, and provided further, that profit allowed shall not exceed 5 percent of cost.
 - 4) Reasonable cost to Contractor of handling material returned to vendors, delivered to County or otherwise disposed of as directed by County.
 - 5) Reasonable allowance for Contractor's administrative costs (not including attorneys' fees) in preparing a termination claim.
 - 6) County shall have no obligation to pay Contractor under this Subparagraph 1.13.H unless and until Contractor provides County with updated and acceptable as-builts and project record documents for Work completed prior to termination.
6. Except as provided in Subparagraph 5 above, in no event shall County be liable for costs incurred by Contractor or subcontractors or subconsultants after receipt of a notice of termination. Such non-recoverable costs include, but are not limited to, anticipated profits on the Contract, post-termination employee salaries, post-termination administrative expenses, post-termination overhead or unabsorbed overhead, costs of preparing and submitting a proposal, attorneys' fees or other costs relating to prosecution of claims or lawsuits under Subparagraph J below entitled "Remedies", pre-judgment interest, or any other expense that is not reasonable and authorized under Subparagraph 5 above.
7. This section shall not prohibit Contractor from recovering costs necessary to discontinue further work under the Contract as provided for in Subparagraph 2 above, or costs authorized by County to settle Claims from subcontractors or subconsultants, or internal administrative costs necessary for preparation of Contractor's termination claim.
8. In arriving at the amount due Contractor under this clause there shall be deducted:
- a. all payments made to Contractor, applicable to the terminated portion of the Work,
 - b. any claim that County may have against Contractor in connection with the Contract, and
 - c. the agreed price for, or proceeds of sale of, any materials, supplies, or other things kept by Contractor or sold, under provisions of this clause, and not otherwise recovered by or credited to County.
9. If termination hereunder is partial, before settlement of the terminated portion of the Contract, Contractor may file with County a request in writing for equitable adjustment of price or prices specified in the Contract relating to the continued portion of the Contract (portion not terminated by notice of termination). Nothing contained herein shall limit the right of County and Contractor to agree upon amount or amounts to be paid to Contractor for completion of the continued portion of the Contract when the Contract does not contain an established contract price for the continued portion. However, in determining an

equitable adjustment for the remaining Contract Price, the parties shall use the Contract Price or proposal price for the Work, unless manifestly unreasonable.

I. CONTINGENT ASSIGNMENT OF SUBCONTRACTORS AND SUBCONSULTANTS

Contractor hereby assigns to County each subcontract and subconsultant agreement for a portion of the Work, provided that:

1. Assignment is effective only after termination of the Contract by County for cause pursuant to Subparagraph G above or for convenience pursuant to Subparagraph H above; and,
2. Assignment is effective only for those subcontractor or subconsultant agreements that County accepts by notifying the subcontractor or subconsultant in writing; and
3. Assignment is subject to the prior rights, if any, of the Surety, obligated by the bond provided under the Contract, where the Surety exercises its rights to complete the Contract.

J. REMEDIES

1. Subject to the Contract provisions regarding claims, claim review, and claim resolution, and subject to the limitations therein, all claims, counter-claims, disputes and other matters in question between County and Contractor arising out of or relating to this Contract or its breach will be decided in a court of competent jurisdiction within the State of California.
2. All of County's remedies provided in the Contract are cumulative with each and every other remedy herein or otherwise provided by law; and County shall be entitled to any and all equitable and legal remedies according to law.

K. PATENTS

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 Contract Price. Contractor shall save, keep, hold harmless, and fully indemnify those identified in Subparagraph 1.13.C.2 from the claims, suits, actions, losses and liabilities referred to therein, including those that may at any time arise or be set up for any infringement of patent rights, copyright, trade name, trademark, service mark, trade secret or other like intellectual property of any person or persons in consequence of use by them or any of them of articles to be supplied under the Contract and of which Contractor is not patentee or assignee or has no lawful right to sell the same. Such costs or expenses for which Contractor agrees to indemnify and hold harmless the above indemnitees include but are not limited to any and all license fees, whether such fees are agreed to by indemnitees or ordered by a court or administrative body of competent jurisdiction.

L. SUBSTITUTION FOR PATENTED AND SPECIFIED ARTICLES

1. Except as noted specifically in the Contract Documents, whenever in the Specifications a material or process is designated by patent or proprietary name or by name of manufacturer, such designation shall be deemed to be used for purposes of facilitating description of the material and process desired, and shall be deemed to be followed by the words "or equivalent", and Contractor may offer any substitute material or process that Contractor considers equal in every respect to that so designated. Project Manager will approve any such substitute material or process offered by Contractor if, in opinion of Construction Manager, it is equal in every respect to the material or process so designated.

2. Contractor shall submit to Construction Manager a separate request for substitution pursuant to **Division 01 General Requirements Section 01 25 00 (Substitution Procedures)**.

M. INTEREST OF PUBLIC OFFICERS

No representative, officer, or employee of County, no member of the governing body of the locality in which the Project is situated, 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 have any interest, direct or indirect, in this Contract or the proceeds thereof.

N. LIMIT OF LIABILITY

NEITHER COUNTY, CONSTRUCTION MANAGER NOR THEIR RESPECTIVE EMPLOYEES, OFFICERS, DIRECTORS, REPRESENTATIVES, CONSULTANTS OR AGENTS SHALL HAVE ANY LIABILITY TO CONTRACTOR FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, EXCEPT TO THE EXTENT THAT THESE CONTRACT DOCUMENTS OR APPLICABLE PUBLIC CONTRACTING STATUTES MAY SPECIFY THEIR RECOVERY.

O. SEVERABILITY

Any provisions (or portions thereof) of this Contract prohibited by, unlawful, or unenforceable under any applicable law of any jurisdiction shall as to such jurisdiction be ineffective without affecting other provisions (or portions thereof) of this Contract. If the provisions of such applicable law may be waived, they are hereby waived to the end that this Contract may be deemed to be a valid and binding agreement enforceable in accordance with its terms. If any provisions (or portions thereof) of this Contract are prohibited by, unlawful, or unenforceable under any applicable law and are therefore stricken or deemed waived, the remainder of the provisions and this Contract shall be interpreted to achieve the goals or intent of the stricken or waived provisions or portions thereof to the extent such interpretation is consistent with applicable law.

P. PERFORMANCE RETENTIONS

All provisions of Public Contracts Code §22300 are deemed incorporated into the Contract Documents. See **Division 01 General Requirements Section 01 29 00 (Payment Procedures)**.

Q. CONTRACT DOCUMENTS AND EXERCISE OF CONTRACT RESPONSIBILITIES

1. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between County or its representatives and a subcontractor or subconsultant or sub-subcontractor or sub-subconsultant (including but not limited to designers, architects and engineers) or (2) between any persons or entities other than County and Contractor. Contractor is fully responsible for all acts, omissions or negligence of its subcontractors, subconsultants, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor's own acts, omissions or negligence.

2. County, and Construction Manager, as County's representative, do not, in exercising their responsibilities and authorities under the Contract Documents, assume any duties or responsibilities to any subcontractor or subconsultant or supplier, nor do County or Construction Manager assume any duty of care to Contractor, its subcontractors, subconsultants, or suppliers.

R. CARE, CUSTODY AND CONTROL

All risk of loss to the Work shall be with County before and after completion or termination of this Contract, but subject to the warranties, performance, and any other continuing obligations of Contractor hereunder.

S. TITLE TO WORK: NO LIENS

Legal title to all Work shall pass to and vest in County as Work is performed, and title to all materials and equipment shall pass to and vest in County when such materials and equipment are delivered to the site (or as soon as title passes from the vendor or supplier thereof). Contractor shall keep the site and all materials and equipment free and clear of all liens, stop notices and charges arising out of performance of this Contract, and shall indemnify, defend and hold harmless those identified in Subparagraph 1.13.C.2 of these General Conditions from the claims, suits, actions, losses and liabilities described therein, including those that result from any breach of this responsibility, and shall defend any claim or suit brought against any party required to be indemnified hereunder based upon any such claim of title or lien.

Contractor shall promptly pay each subcontractor or subconsultant the amount to which such subcontractor or subconsultant is entitled, and shall, by an appropriate agreement with each subcontractor or subconsultant, require each subcontractor or subconsultant to make payments to its sub-subcontractors or sub-subconsultants in a similar manner.

T. PROPRIETARY OR CONFIDENTIAL INFORMATION OF COUNTY

Contractor understands and agrees that, in the performance of services under this Contract or in the contemplation thereof, Contractor may have access to private or confidential information that may be owned or controlled by County, and that such information may contain proprietary or confidential details, the disclosure of which to third parties may be damaging to County. Contractor agrees that all information disclosed by County to Contractor shall be held in strict confidence and used only in performance of the Contract. Contractor shall exercise the same standard of care to protect such information as a reasonably prudent consultant would use to protect its own proprietary data.

U. OWNERSHIP OF RESULTS/WORKS FOR HIRE

1. The drawings and specifications that are prepared pursuant to this Contract are and shall remain the property of County. Contractor hereby does and shall cause all subcontractors or subconsultants who prepared design documents for the Project to transfer, convey, and assign to County all rights throughout the world in the nature of copyright and trademark in and to all versions of such design documents, including but not limited to the Contract Documents. County shall have the right to distribute or to cause the distribution of such drawings and specifications to third parties as may reasonably be necessary in connection with the Project.
2. Any and all artwork, copy, posters, billboards, photographs, videotapes, audiotapes, systems designs, software, reports, diagrams, surveys, source codes or any original works

of authorship created by Contractor or its subcontractors or subconsultants in connection with services performed under this Contract shall be works for hire as defined under Title 17 of the United States Code, and all copyrights in such works are the property of County. In the event that it is ever determined that any works created by Contractor or its subcontractors or subconsultants under this Contract are not works for hire under U.S. law, Contractor hereby assigns all copyrights to such works to County. With the prior written approval of Construction Manager, Contractor may retain and use copies of such works for reference and as documentation of its experience and capabilities.

V. COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

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 perform the work specified in this Contract 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 this Contract and further agrees that any violation of this prohibition on the part of Contractor, its subcontractors, subconsultants, employees, representatives, agents or assigns shall constitute a material breach of this Contract.

W. DISPUTES

Contractor shall continue the Work throughout the course of any and all disputes. Contractor's failure to continue the Work during any and all disputes shall be considered a material breach of this Contract. Contractor agrees that the existence or continued existence of a dispute does not excuse performance under any provision of this Contract, including but not limited to the time to complete the Work. Contractor also agrees that should Contractor discontinue the Work due to a dispute or disputes, County may terminate this Contract for cause. Contractor further agrees that should Contractor not properly perform the Work due to a dispute or disputes, any and all claims, whether in law or in equity, Contractor may have against County, Construction Manager and their officers, directors, agents, representatives, consultants and employees, whether such claims are pending, anticipated or otherwise, shall be deemed to have been waived and forever foreclosed.

X. STATUTE OF LIMITATIONS

Any applicable statute of limitations shall commence to run as to all acts or failures to act by either party to this Contract on the date of issuance by Construction Manager of the final Certificate for Payment, or the effective date of a termination of all of this Contract, whichever is earlier, except for latent defects, in which case the cause of action shall accrue on discovery of the latent defect and its cause.

Y. WAIVERS

Either party's waiver of any breach, or the omission or failure of either party, at any time, to enforce any right reserved to it, or to require performance of any of the terms, covenants, conditions or other provisions of this Contract, including the timing of any such performance, shall not be a waiver of any right to which any party is entitled, and 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.

Z. NOT USED

AA. COUNTY DRUG POLICY - DRUG FREE WORKPLACE

Contractor, Contractor's employees, and Contractor's subcontractors and their employees shall comply with County's policy of maintaining a drug-free workplace. Neither Contractor/Subcontractor nor Contractor's/Subcontractor's employees shall unlawfully manufacture, distribute, dispense, possess or use controlled substances, as defined in 21 U.S. Code Section 812, including marijuana, heroin, cocaine and amphetamines, at any County facility or work site. If Contractor or any employee of Contractor is convicted or pleads nolo contendere to a criminal drug statute violation occurring at a County facility or work site, Contractor within **five (5) days** thereafter shall notify the head of County department/agency for which the contract services are performed. Violation of this provision shall constitute a material breach of this contract.

BB. COUNTY RECYCLED PRODUCT PURCHASE PREFERENCE PROGRAM

Pursuant to Clinton Executive Order (Federal Acquisition, Recycling and Waste Prevention), Contractor shall use products with post-consumer recycled content to the greatest extent feasible.

1. RECYCLED CONTENT PRODUCT DEFINITIONS

"Recycled Product": Shall mean a product that contains the highest amount of post-consumer materials practicable or, when post-consumer material is impracticable for a specific type of product, containing substantial amount of recovered material.

"Post-consumer Material": Is defined as a finished material which would have been disposed of as a solid waste, having completed its life cycle as a consumer item, and does not include manufacturing wastes.

"Secondary (recovered) Material": Is defined as fragments of finished products or finished products of a manufacturing process, which has converted a resource into a commodity of all economic value, and includes post-consumer waste, but does not include excess virgin resources of the manufacturing process.

"Re-used or Re-manufactured Product": Shall mean any product, good, material or supply which has been diverted from the supply of discarded materials for refurbishing and marketing said product, good material or supply without substantial change to its original form.

2. RECYCLED CONTENT STANDARDS

It is the policy of Amador County to purchase products containing the highest practicable amount of recycled content, preferably post-consumer material, as long as product performance is not jeopardized and products are available within a reasonable period of time.

CC. RECYCLED PAPER POLICY

Contractor is encouraged, whenever practicable, to use recycled paper for the production of all printed and photocopied documents related to the fulfillment of this contract, and shall attempt to

identify that the cover page of each document printed on recycled paper bears an imprint identifying it as recycled paper.

1.14 MODIFICATIONS OF CONTRACT

A. ALTERATIONS, MODIFICATIONS AND FORCE-ACCOUNT WORK

1. No modification or deviation from the Contract or the Drawings and Specifications will be permitted except by written Addenda, written Change Order or written Supplemental Instruction.
2. Construction Manager, before the date of completion of the Work, may order changes in the Work and may order extra materials and extra work in connection with performance of the Contract, and Contractor shall promptly comply with such orders. Any such orders shall be diligently carried out by Contractor in accordance with the Contract Documents.
3. Alterations, modifications or extras that result in a change in the Contract Price or Contract Time, or both, shall be effected by a written Contract Modification that has been approved by Construction Manager and signed by Project Manager for amounts not to exceed \$50,000 per modification. Modifications for amounts exceeding \$50,000 up to \$100,000 per change may be approved and signed by the County Administrative Officer. Modifications in excess of those amounts for individual change orders, or any change order that in the aggregate exceeds 5% of the Contract Price, must be approved by the Board of Supervisors. Those alterations or modifications that do not result in a change in the Contract Price or Contract Time, and do not substantially change the Work, shall be effected only by a written directive to Contractor from Construction Manager. If there is any alteration, modification or extra where Construction Manager and Contractor disagree as to whether it will result in a change in the Contract Price or Contract Time, the provisions of Paragraph 1.12 of these General Conditions shall apply.
4. Contractor, in its price proposals for changes in the Work that increase the Contract Price, shall break out and list its costs and use percentage markups as described in this Paragraph. Contractor shall require its subcontractors and subconsultants to do the same, and the subcontractors' or subconsultants' price proposals shall accompany Contractor's price proposals.
5. Contractor shall, upon request by County, permit inspection of the original unaltered Contract original estimate, subcontract agreements, and purchase orders relating to the change; and documents substantiating all costs associated with the cost proposal.
6. Changes in the Work and extensions of Contract Time made pursuant to this Paragraph shall not in any way release the guarantees/warranties given by Contractor pursuant to the provisions of the Contract Documents, nor shall such changes in the Work relieve or release the Sureties of bonds executed pursuant to such provisions. The Sureties, in executing such bonds, shall be deemed to have expressly agreed to any such change in the Work and to any extension of Contract Time made by reason thereof.
7. Procedures for Modifications of Contract are given in **Division 01 General Requirements Section 01 26 00 (Contract Modification Procedures)**.

B. ENTIRE AGREEMENT

1. The Contract Documents, and any Contract Modifications, shall represent the entire and integrated agreement between County and Contractor regarding the subject matter of this agreement and shall constitute the exclusive statement of the terms of the parties' agreement.
2. The Contract Documents, and any Contract Modifications, shall supersede any and all prior negotiations, representations or agreements, either written or oral, express or implied, that relate in any way to the subject matter of this agreement or written modifications. County and Contractor represent and agree that they are entering into this Contract and any subsequent written modification in sole reliance upon the information set forth in the Contract Documents or Contract Modifications and the parties are not and will not rely on any other information.

C. MODIFICATIONS

The Contract Documents may be amended or modified only by a written amendment, change order or directive issued in accordance with the provisions of the Contract Documents, and particularly Paragraph 1.14 hereof. The Contract Documents may not be modified or supplemented orally or by implication. To be effective, any modification to the Contract Documents must be in writing and must be signed by an authorized representative of County as identified in the Contract Documents.

1.15 TIME ALLOWANCES

A. TIME ALLOWANCE FOR PERFORMANCE OF CONTRACT

1. When the Contract has been signed by Contractor and County, and funds necessary to make payments as required under the Contract are available, County will serve a Notice to Proceed upon Contractor, either by depositing the notice in a post office box regularly maintained by United States Postal Service in a postpaid wrapper directed to Contractor at its legal address, or (at County's option) by delivery by other means at Contractor's legal address.
2. The start date for Contract Time shall be on the date indicated in the Notice to Proceed, as such date may be modified by Construction Manager to accommodate the Master Construction Schedule. The total number of days for completion of Work shall be as provided in the Contract. Contractor shall prosecute the work diligently and regularly at such a rate of progress as to ensure completion of the Work within the time specified in the Preliminary Construction Schedule, as superseded by the Master Construction Schedule.

B. CHANGE OF CONTRACT TIMES

1. The Contract Time may be changed only by Change Order or Written Amendment. All time limits stated in the Contract Documents are of the essence of the Contract.
2. The Contract Time will be adjusted in an amount equal to the time lost on the critical path of the Project ("delays") due to the following:
 - a. Changes in the Work ordered by County;
 - b. Acts or neglect by County, or its Construction Manager, acts or neglect of utility owners, and acts or neglect of other Contractors performing other Work under contract with County, provided Contractor has fully and completely performed its

responsibilities under the Contract Documents, including but not limited to its cooperation and coordination responsibilities required by the Contract Documents;

- c. Fires, floods, abnormal weather conditions, earthquakes, civil disturbances, or acts of God, provided damage resulting therefrom is not the result of Contractor's failure to properly protect the Work as required by the Contract Documents.

Notwithstanding the foregoing, the Contract Time shall not be extended unless Contractor has actually been prevented from completing any part of the Work within the Contract Time due to delay that is (i) beyond the control of Contractor, and (ii) due to reasons for which Contractor is not responsible, and (iii) a claim for delay is made as provided for herein. Delays attributable to and within the control of a subcontractor, subconsultant, or supplier shall be deemed to be delays within the control of Contractor.

3. Where Contractor is prevented from completing any part of the Work within the Contract Time due to delay beyond the control of both County and Contractor, an extension of Contract Time in an amount equal to the time lost shall be Contractor's sole and exclusive remedy for such delay. County shall not be liable to Contractor, any subcontractor, any subconsultant, any supplier, or any other person or organization, or to any Surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of Contractor, or (ii) delays beyond the control of both parties including but not limited to fires, floods, earthquakes, abnormal weather conditions, civil disturbances, acts of God or acts or neglect by utility owners or other Contractors performing other work as contemplated by Paragraph 1.06 of these General Conditions.
4. Delays due to adverse weather conditions will not be allowed for weather conditions that fall within parameters listed herein. Adverse weather delays may be allowed only if the delay is the result of County, or climatic conditions that exceed normal conditions for this area for the past 5 consecutive years, averaged for each month, in accordance with data from the National Oceanic and Atmospheric Administration (NOAA).

C. NOTICE OF DELAY

Within **three (3) business days** of the beginning of any delay Contractor shall notify Construction Manager, in writing, of all anticipated delays resulting from the delay event in question.

1. The notice shall explain the reason for the delay and corrective measures undertaken by Contractor. The notice shall constitute application for an extension of time only if the notice requests an extension and sets forth the impact of the delay and Contractor's estimate of additional time required, together with a full recital of causes of unavoidable delays relied upon.
2. After receipt of a request for a time extension, with verifiable documents and justifications included, Construction Manager will make a decision thereon, and will advise Contractor in writing.
3. No time extensions shall be considered without related documents and justifications necessary for Construction Manager to make a determination.
4. No time extensions shall be granted for delays for which Contractor fails to give timely notice. Contractor hereby waives any and all damages or other remedies for delay for which timely notice is not given.

Any request for extension of time shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant is entitled as a result of the occurrence of such event. All claims and adjustments in the Contract Time shall be determined by Construction Manager. 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 Paragraph.

D. NO DAMAGE FOR CONTRACTOR CAUSED DELAY

Contractor shall not be entitled to any compensation (including but not limited to extended field or home office overhead, field supervision, costs of capital, interest, escalation charges, or acceleration costs), adjustment in Contract Time or other impacts for any delays caused in whole or in part by Contractor's failure to perform its obligations under this Contract, or during periods of delay concurrently caused by Contractor and either County or others. Contractor may be compensated for delays caused directly and solely by County, except that Contractor shall not be entitled to damages for delay to the Work caused by the following reasons:

1. County's enforcement of government acts or regulations, or the provisions of the Contract Documents;
2. For unanticipated site conditions that are beyond the contemplation of the parties, except that County may approve direct costs associated with unknown conditions but not costs or damages that are the result of such delays.

E. EXTENSION OF TIME DOES NOT WAIVE COUNTY'S RIGHTS

Granting an extension of Contract Time for any reason shall in no way operate as a waiver on the part of County of its right to collect liquidated damages for other delays or of its right to collect other damages or other rights to which County is entitled.

F. LIQUIDATED DAMAGES

1. Execution of the Contract by Contractor shall constitute acknowledgement by Contractor that Contractor understands, has ascertained and agrees that County will actually sustain damages in the amount fixed in the Contract for each and every day during which completion of the Work is delayed beyond the expiration of the Contract Time or extensions thereof. Contractor and County agree that such damages shall be presumed to be the damages actually sustained by County as defined below, and that because of the nature of the project, it would be impracticable or extremely difficult to fix the actual damages.
2. All sums representing liquidated damages shall be deducted from any money due or to become due to Contractor. Sums for liquidated damages are listed specifically in the construction Contract.
3. Liquidated damages shall be considered not as a penalty but as agreed monetary damage sustained by County for loss of revenue and increased project administration expenses, including extra inspection, construction management and architectural and engineering expenses related to this Contract, because Contractor failed to perform and complete the Work within the Contract Time or extensions thereof. Liquidated damages shall not be deemed to include within their scope additional damages arising from defective work, cost of completion of the Contract, cost of substitute space, or damages suffered by others or other forms of liability claimed by or against County as a result of delay (e.g., delay or delay related claims of other contractors, subcontractors, subconsultants or tenants), and

defense costs thereof; Contractor shall be responsible for the actual amount of any such damages.

4. Should Contractor fall behind the approved progress schedule, County reserves the right to deduct liquidated damages based on the estimated time of late completion. Provided County has, in its sole discretion, made a good faith determination that the Contract retention is not or will not be sufficient to satisfy the liquidated damages obligation of Contractor, County need not wait until Contract completion to withhold liquidated damages and may withhold the same from Contractor's progress payments.
5. Should money due or to become due to Contractor be insufficient to cover agreed liquidated damages, then Contractor forthwith shall pay the remainder to County.
6. Time is of the essence.

1.16 WORKING CONDITIONS AND PREVAILING WAGES

A. USE OF SITE/SANITARY RULES

1. All portions of the Work shall be maintained at all times in neat, clean and sanitary condition.
2. Toilets shall be furnished by Contractor for use of Contractor and subcontractor employees on site, and their use shall be strictly enforced. Toilet rooms provided in construction support facilities shall meet applicable federal, state and local accessibility requirements.
3. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the portions of the site designated by Construction Manager, and shall not unreasonably encumber the site with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work.
4. During the progress of the Work, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall 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 site clean and ready for occupancy by County at Completion of the Work. Contractor shall restore to original and clean condition all structures or property not designated for alteration by Contract Documents.
5. 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 the Work structures or adjacent property to stresses or pressures that will endanger it.

B. PROTECTION OF WORK, PERSONS AND PROPERTY

1. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall comply with all safety requirements specified in any safety program. Contractor shall be responsible for all damage to the Work, property or structures, all injuries to persons, and all economic

damage arising from the performance of the Contract. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- a. All persons on the site, adjacent work sites, and any other person who may be affected by the Work;
 - b. All Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
 - c. All work, property or structures at the site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities, not designated for removal, relocation or replacement in the course of construction.
2. Where necessary, Contractor shall furnish guards, fences, warning signs, walks and lights and take all necessary precautions to prevent damage or injury. Safety orders, rules and recommendations of Cal-OSHA or County of Amador applicable to the Work shall be obeyed and enforced by Contractor.
 3. 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.
 4. All damage, injury or loss to any property referred to in Subparagraph (b) or (c) of Subparagraph 1 above caused, directly or indirectly, in whole or in part, by Contractor, any subcontractor, subconsultant, 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, shall be remedied by Contractor. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Final Acceptance of the Work has been achieved. Neither County nor Construction Manager nor any of their respective agents or representatives assume any responsibility for collecting indemnity from any person or persons causing damage to the Work. The existence of insurance coverage for any damage so incurred shall in no way limit Contractor's liability or County's rights of indemnity.
 5. 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.
 6. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and the public, and shall post danger signs warning against hazards created by construction including, but not limited to, protruding nails or reinforcing steel, hod hoists, elevator hatchways, scaffolding, window openings, stairways, and falling materials.
 7. Contractor shall immediately replace or repair any unsafe ladder, scaffolding, shoring, or bracing, and correct any other dangerous or hazardous situation that may exist.

8. The responsibility for maintaining a safe working site shall be Contractor's. County and Architect or Engineer undertake no obligation to suspend the Work or notify Contractor of any hazardous conditions or noncompliance with safety laws.
9. Contractor shall not endanger any work by cutting, excavating, or otherwise altering the Work. Contractor shall not cut or alter the work of any other contractor except with the consent of Construction Manager, nor overload any new or existing structures by the placing or storage of materials, equipment, or other items thereon, if necessary, Contractor shall provide calculations proving the safety of any proposed loading.
10. If it is necessary to work at night, or where daylight is obscured, Contractor shall provide and maintain lighting of adequate level to properly execute the Work and to permit thorough inspection.
11. Contractor shall take extraordinary care to prevent fires and keep all flammable materials and oily rags in tightly closed metal containers. Contractor shall exercise particular care when welding or cutting, and when disposing of waste materials, if the nature and quantity of the materials might create or increase a fire hazard.
12. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with laws or regulations.
13. County may, at its option, retain such moneys due or to become due under the Contract as County deems necessary until any and all suits or claims against Contractor for injury to persons or property shall have been settled or finally resolved and satisfactory evidence to that effect furnished.

C. RESPONSIBILITY FOR SAFETY AND HEALTH

1. The exact nature of materials and wastes disposed of at the landfill is unknown. The possibility exists of encountering gases and/or other substances during the Work that may be potentially hazardous to the safety and health of personnel, especially those working in the vicinity of open excavations and pipes venting gases.
2. Contractor is advised that decomposing refuse produces landfill gas which is approximately 50 percent methane (natural gas) by volume. Landfill gas is colorless, can be odorless, may contain hydrogen sulfide, toxic or hazardous materials, is combustible, and may contain no oxygen. Landfill gas can also migrate through several thousand feet of soil adjacent to landfills. Contractor is advised of the need for precautions against fire, explosion and asphyxiation when working on the landfill and in or near the excavations on the project site.
3. Contractor is advised leachate and landfill gas condensate discharged to the Class II Surface Impoundment
4. Contractor shall submit with bid documents, a general Health and Safety Plan to the Owner, for informational purposes only
5. Contractor shall submit, after Notice of Award, but prior to pre-construction meeting, a Site Specific Health & Safety Plan to be approved by Owner. Acceptance of the plan by Owner does not release the Contractor of liability in the event of an accident or injury, nor does it place any liability on the Owner.
6. Contractor shall develop and implement a Health and Safety Program in accordance with all applicable California OSHA regulations, 29 CFR 1910 and 29 CFR 1926, and any other applicable federal state or local agency regulations or requirements. If any

of these requirements are in conflict, the more stringent requirement shall apply. Contractor's failure to be thoroughly familiarized with the aforementioned safety and health provisions shall not relieve the Contractor of responsibility for full compliance with the obligations and requirements set forth herein. The Contractor's Health and Safety Plan shall include as appropriate, but shall not be limited to, the items required by OSHA 29 CFR 1910.120:

- a. Organizational structure
 - b. Comprehensive work plan
 - c. Hazard analysis for each site task
 - d. Employee training
 - e. Personal protective equipment to be used for each task
 - f. Medical surveillance
 - g. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used
 - h. Site control measures
 - i. Decontamination procedures
 - j. Emergency response plan
 - k. Confined space entry procedures (if applicable)
 - l. Spill containment program
7. Provide to the Owner, prior to the start of any field activities, certification that requirements of this Section have been met. This certification shall include:
- a. Documentation of the training required under OSHA 29 CFR 1910.120 for the site personnel and supervisors.
 - b. Documentation of current first aid and CPR training for at least two employees per work shift.
 - c. Documentation of participation of all site personnel in a medical surveillance program in accordance with OSHA 29 CFR 1910.120.
 - d. Documentation that all site personnel expected to wear respiratory protection have been medically examined and approved for wearing such equipment and have been fit tested in accordance with OSHA regulations.
8. Contractor shall insure that Contractor, Contractor's employees, agents, invitees, subcontractors, subconsultants; and their employees, agents and invitees while at the site comply with applicable health and safety laws, including without limitation Occupational Safety and Health Act of 1970 and rules and regulations issued pursuant thereto, and any of County's safety regulations, as amended from time to time. Contractor shall further comply with any directions of County regarding protective clothing, head covering, eye protection, etc. County shall have no duty to issue such directions.
9. Safety of all persons employed by Contractor or subcontractors or subconsultants and their respective agents and invitees on the site shall be the full responsibility of Contractor. Contractor shall notify Construction Manager in writing of the existence of hazardous conditions, property or equipment at the site that are not under Contractor's control. However, it shall be Contractor's responsibility to take necessary precautions against injury to persons or damage to property from recognized hazards until corrected by the responsible party.
10. If the Owner observes any of the Contractor's employees or Subcontractors engaging in an unsafe act or procedure that may result in serious injury or death to the person performing the act/procedure, or to any other person, the Owner shall have the right,

but not the duty, to stop the Work until the condition is corrected. The Contractor shall be held responsible for any increased costs that result from this work stoppage.

11. Contractor shall be responsible for holding mandatory weekly safety meetings on the site. The Owner shall be notified of the time and place for the meetings, so they may attend if they desire. Meetings shall reiterate all safety measures to be taken and shall discuss any violations committed and preventative measures. The Contractor shall provide the Owner with a copy of the minutes and the attendance upon request and schedule for the meetings.
12. Contractor shall provide all personnel working on the project with required orientation and training on the potential hazards and the appropriate use of safety equipment.
13. Contractor shall meet applicable OSHA health and safety requirements at all times during drilling and excavations. The Contractor shall secure all work areas and close any open holes or excavations when not working by marking with ribbons and cones, and posting of signs indicating to the public to stay away due to the existence of deep open excavations.
14. Contractor shall provide continuous LEL gas detection monitoring and oxygen monitoring in enclosed areas prone to gas build-up or during drilling.
15. Contractor shall confine all persons under Contractor's employ or employ of its subcontractors, subconsultants or any other person acting on behalf of Contractor or subcontractors or subconsultants to that portion of the site where Work under the Contract is to be performed, to routes to be designated by County for ingress and egress thereto and to any other areas County may expressly permit Contractor to use. Within such areas, except those routes for ingress and egress over which Contractor has no right of control, Contractor shall provide safe means of access to all places at which persons may at any time have occasion to be present.
16. To the extent Contractor does not believe the site is safe, Contractor is to immediately stop all work until all unsafe site conditions have been corrected and notify Construction Manager in writing of both the stoppage and corrective measures. Contractor's failure to stop all work, or Contractor's recommencement of work, shall constitute Contractor's express agreement to indemnify Construction Manager, County, and their officers, employees, and agents against any and all claims or liability that arises related to such site conditions. This latter indemnity is independent of and in addition to any other express or implied indemnity requirements in the Contract Documents.
17. When so ordered, Contractor shall stop any part of the Work which Construction Manager deems unsafe until Contractor undertakes satisfactory corrective measures. Contractor shall not continue work until Contractor has submitted its written report of Contractor's corrective actions that have actually been executed by Contractor. Contractor understands and agrees that if Contractor fails to either notify Construction Manager and/or to actually implement necessary corrective action, that Contractor's failure will be deemed a material breach of contract and this Contract may be terminated based solely upon such breach. Further, Contractor agrees that it shall not have or make any claims for damages arising out of such work stoppages or termination. In addition to the right to terminate, if Contractor neglects to take corrective measures in response to Construction Manager's direction, Construction Manager may take necessary corrective action at the cost and expense of Contractor, including deduction from progress or final payment, or back-charge or offset against other contracts, for Construction Manager's costs in pursuing corrective action. Failure on the part of Construction Manager to stop unsafe practices shall in no way relieve Contractor of its responsibility therefor and Contractor understands it has primary responsibility and shall not delegate such to any other party.

D. EMERGENCIES

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Construction Manager or County, is obligated to act to prevent threat and damage, injury or loss, until directed otherwise by County or Construction Manager. Contractor shall give Construction Manager prompt written notice if Contractor believes that any significant changes in the Work or variations from Contract Documents have been caused thereby. If Construction Manager determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Contract Modification, Change Order or work directive will be issued to document the consequences of such action.

E. USE OF ROADWAYS AND WALKWAYS

Contractor shall not unnecessarily interfere with use of any roadway, walkway or other facility for vehicular or pedestrian traffic by any party entitled to use it. Wherever interference becomes necessary for proper and convenient performance of the Work and no satisfactory detour route exists, Contractor shall, before beginning interference, provide a satisfactory detour, temporary bridge, or other proper facility for traffic to pass around or over the interference and shall maintain it in satisfactory condition as long as the interference continues, all without additional compensation unless otherwise provided in the Contract Documents.

F. NONDISCRIMINATION

No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical handicap, medial condition, marital status, sexual preference, or gender of such persons, except as provided in section 12940 of the Government Code, and every contractor for public works violating the provisions of Section 1735 of the Labor Code is subject to all the penalties imposed for a violation of Chapter 1, Part 7, Division 2 of the Labor Code.

G. PREVAILING WAGES

1. Pursuant to Labor Code Section 1770 et seq., Contractor shall pay to persons performing labor in and about the Work 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 legal holiday and overtime work in the locality, which per diem wages shall not be less than the stipulated rates contained in a schedule determined by the Director of the State Department of Industrial Relations to be the general prevailing rate of per diem wages for each craft or type of worker or mechanic needed to execute the Work.
2. Contractor shall forfeit, as a penalty to County, Fifty Dollars (\$50.00) for each laborer, worker, or mechanic employed for each day, or portion thereof, on which such laborer, worker or mechanic is paid less than the stipulated rates for any Work done by him or her, or by any subcontractor or subconsultant under him or her, in violation of Articles 1 and 2 of Chapter I of Part 7 of Division 11 of the California Labor Code. The sums and amounts forfeited pursuant to this Subparagraph 2 and the Labor Code shall be withheld and retained from payments due or to become due to Contractor under this Contract and the terms of

the 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 County. The final amount of forfeiture shall be determined by the Labor Commissioner pursuant to Labor Code §1775.

3. Contractor shall insert in every subcontract, subconsultant agreement or other arrangement that Contractor may make for performance of the Work a provision that the subcontractor or subconsultant shall pay persons performing labor or rendering service 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 as provided in the Labor Code.
4. Pursuant to California Labor Code §1810, the parties agree that eight (8) hours labor constitutes a legal day's work in all cases where the same is performed under the authority of any law of this State, or under the direction, or control, or by the authority of any officer of this State acting in his or her official capacity, or under the direction, or control or by the authority of any municipal corporation, or of any officer thereof.
5. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by County, shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of Contractor awarded the Contract or performing the Contract shall not be marked or obliterated. Copies of records furnished to a joint labor management committee under the federal Labor Management Cooperation Act of 1978 shall be marked or obliterated only to prevent disclosure of an individual's social security number.
6. Contractor shall submit certified payroll, statement of compliance and all certified payroll documents as proof of payment of prevailing wages and rates. County or its authorized representative shall monitor wage rates and payment of prevailing wages by interviewing workers on the job site.

END OF DOCUMENT

**BUENA VISTA LANDFILL CLASS III
PHASE I WMU FINAL COVER RECONSTRUCTION
CLASS II SURFACE IMPOUNDMENT LINER
IMPROVEMENT PROJECT**

**GENERAL
REQUIREMENTS**

VOLUME 1

**Amador County
Buena Vista Landfill
6500 Buena Vista Road
Ione, California 95640**

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes:
1. Project Information
 2. Work covered by Contract Documents
 3. Work under other contracts
 4. Work sequence
 5. Cooperation of all Contractors and coordination with other work
 6. Execution, correlation, and intent
 7. Existing utilities
 8. Existing conditions
 9. Construction layout
 10. Field engineering
 11. Installation
 12. Access to Site
 13. Work Restrictions
 14. Specifications and Drawing
 15. Miscellaneous Provisions
 16. Reference standards
 17. Products or services ordered in advance
 18. County furnished products

1.02 PROJECT INFORMATION

- A. Project Identification: Amador County Buena Vista Landfill Improvement Project
1. Project Location: 6500 Buena Vista Rd, Ione, CA 95640
 2. Owner: County of Amador
- B. Engineer: APTIM Environmental & Infrastructure, 4005 Port Chicago Highway, Concord, CA 94520
Engineer: NV5, 2525 Natomas Park Drive, Suite 300, Sacramento, CA 95833

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Contract Documents define the Work of the Contract, which comprises, but is not limited to: the Work as described in the Contract Documents (including, but not limited to, Project Manual: Invitation to Bid 24-01, Construction Contract, General Conditions, Volume 1 General Requirements Division 01, Volume 1 Technical Specifications Divisions 02 through 33 and As-Built Drawings (Phase I Landfill Gas Extraction System and Post Closure Maintenance Construction Drawings 2002) Vector Engineering, Inc. Construction Quality Assurance and Quality Control Plan. Drawings and Plans (ITB 24-01 Bid Set Plans APTIM/NV5 **and all applicable State and federal requirements contained herein**. The Work includes, but is not limited to, the construction of the Phase I landfill final cover reconstruction, and Class II Surface Impoundment expansion at 6500 Buena Vista Road, Ione, California.

The Phase I Landfill Final Cover Reconstruction Project consists of removal of existing final cover soils and construction of a replacement 4-foot thick prescriptive soil final cover system in accordance with California Code of Regulation Title 27 solid waste management regulations. The Phase I landfill is an unlined 15.9 acre waste management unit with an existing active landfill gas control system consisting of nine (9) combined landfill gas and leachate extraction wells, 2 landfill gas extraction wells, one condensate collection and pumping and associated landfill gas piping. Existing environmental controls within the Phase I waste management unit also include two (2) leachate collection sumps. Collected leachate and condensate are discharged to the Class II Surface Impoundment.

The Class II Surface Impoundment Expansion Project consists of cleaning sediment and debris off of the existing Hypalon liner that overlies an existing leak detection sump (to be left in place), raising the existing perimeter earthen berm, and installing a new high density polyethylene (HDPE) liner and leak detection system. This work also includes removal and reinstallation of chain-link security fencing and access gates, removal of existing and reinstallation of electrical service for two (2) existing leachate evaporation sprayer stations (i.e., Ecomister).

- B. Contractor shall perform Work indicated in the Contract Documents or otherwise required to produce finished results shown.
- C. Cultural and Scientific Resources (refer to attached Mitigated Negative Declaration filed December 17, 2020).

1. Should any archaeological or historical resource be encountered during construction activities, work shall immediately cease within a ten-yard perimeter of the find, the Amador County Technical Advisory Committee shall be notified, and a qualified archaeologist shall be consulted for an opinion and for an assessment of the importance of the find and determination of any need to preserve the site or otherwise reduce impacts.
 2. In the event of discovery or recognition of any human remains anywhere within the project area, the County shall comply with the following protocol:
 - a. Immediately cease any disturbance of the area where such suspected remains are discovered, and any nearby areas reasonably suspected to overlie adjacent remains until the Amador County Coroner is contacted, per Section 7050.5 of the California Health and Safety Code, who shall:
 1. Determine if an investigation of cause of death is required;
 2. Determine if the remains are most likely that of Native American origin, and if so suspected:
 - i. The County shall comply with the state laws relating to the disposition of Native American burials under the jurisdiction of the Native American Heritage Commission (NACH) (PRC Section 5097).
 - ii. The descendants of the deceased Native American shall make a recommendation to the County for the means of handling the remains and any associated grave good as provided in Public Resources Code (PRC) Section 5097.98.
 3. If the NACH is unable to identify a descendant, or the descendant fails to make a recommendation within 24 hours after being contacted by the NAHC operations may continue.
- D. Laws and Regulations: Contractor shall construct the Work shown in the Contract Documents, in accordance with applicable codes and regulations.
- E. Environmental considerations:
1. Contractor shall comply with environmental law and shall incorporate the stipulations as referenced in the attached Mitigated Negative Declaration filed December 17, 2020. Attachment 'A' after General Requirements Section 01 11 00 Summary of Work
 2. Contractor shall adhere to environmental requirements identified for the project and environmental permits or consultations completed for the project.
 3. Contractor must detail the expected environmental requirements of the contract in the proposal to include handling any asbestos, lead and any contamination of soil.

1.04 WORK UNDER OTHER CONTRACTS

Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.05 WORK SEQUENCE

Subject to the Master Project Schedule and County's rights of approval in the Contract Documents, Contractor determines the sequence of the Work and coordinates the timing of the Work. Coordination and acceptance of all Contractor schedules by County and Construction Manager is required in accordance with the Contract Documents.

1.06 COOPERATION OF CONTRACTOR AND COORDINATION WITH OTHER WORK.

- A. Contractor shall cooperate with other contractors or forces to the end that any delay or hindrance to the Work will be avoided. The cost of such cooperation will be considered as included in the Contract Price and no additional payment will be made therefor. Contractor shall coordinate with such other contractors and forces as required by the **General Conditions**.
- B. County reserves the right to perform other or additional work, within or adjacent to the limits of the Work specified, at any time by the use of other contractors or other forces. Contractor shall coordinate with County and any of County's forces, or other forces, engaged by County, as required by the **General Conditions**. If the performance of such other or additional work materially increases or decreases Contractor's costs, the Work and the Contract Price will be appropriately adjusted as determined by County and Construction Manager.
- C. Contractor recognizes that use of premises for Work and for construction operations is limited in order to allow for:
 1. County's operation.
 2. Work by other contractors or other forces.

- D. Construction Manager shall coordinate use of premises and access to site with other contractors, utilities, and County's forces, as required by the **General Conditions**. Construction Manager has final authority over coordination, use of premises, and access to site.
- E. Contractor shall cooperate with County and others who may occupy and begin work on Site and inside building, if applicable, prior to completion of the Work.

1.08 EXECUTION, CORRELATION, AND INTENT

A. Correlation and Intent

1. Documents Complementary and Inclusive:
 - a. The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work.
 - b. Any item of work mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both.
2. Coverage of the Drawings and Specifications:
 - a. The Drawings and Specifications generally describe the Work to be performed. Generally, the Specifications describe work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work.
 - b. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown.
 - c. All materials or labor for Work which is shown by either the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor.
 - d. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible, without increase in the Contract Price, for the installation of all items indicated, described, or implied within the Contract Documents.
3. Conflicts. In the event there is a discrepancy between the various Contract Documents, the Contract shall control. Without limiting Contractor's obligation to identify conflicts for resolution by Construction Manager in accordance with the Contract Documents, it is intended that the more stringent, higher quality and greater quantity of Work shall apply.
4. Conformance with Laws:
 - a. Each and every provision of law required to be inserted in the Contract Documents shall be deemed to be inserted herein, and the Contract Documents shall be read and enforced as though it were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party the Contract Documents shall be amended in writing to make such insertion or correction.
 - b. Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents.
 - c. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with any such restrictions or special requirements of the Contract Documents, Contractor shall immediately notify Construction Manager in writing of same and shall cause to be corrected any such violation or inconsistency in the manner provided hereunder.
5. Ambiguity:
 - a. Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Project requirements in the Contract Documents.
 - b. Contractor shall immediately notify Construction Manager of any perceived or alleged error, inconsistency, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided in the Contract Documents.
 - c. If Contractor and/or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or suspects to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained,

Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance.

- d. If Contractor performs, permits, or causes the performance of any Work under submittals or shop drawings prepared by or on behalf of Contractor which are in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction, without increase to or adjustment in the Contract Price or the time for performance.
- e. In no case shall Contractor proceed with the Work if uncertain, without the Construction Manager's written direction and/or approval.

B. Specification Interpretation and Application

2. As shown, etc. Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Construction Manager and Architect or Engineer is intended unless otherwise stated.
3. Provide. "Provide" means "provided complete in place," that is, furnished, installed, tested, commissioned and ready for operation and use.
4. Abbreviations.
 - a. In the interest of brevity, the Specifications are generally written in an abbreviated form in the imperative mood and may not include complete sentences.
 - b. Omissions of words or phrases such as "Contractor shall," "shall be," etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory and directed to Contractor.
 - c. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.
5. Plural. Words in the singular shall include the plural whenever applicable or the context so indicates.
6. Metric. The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1" (25.40 mm), the U.S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."
7. Standard Specifications. Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization's standard specifications, which are in effect at the date of Contractor's Bid.
 - a. If applicable specifications are revised prior to completion of any part of the Work, Contractor may, if acceptable to the Construction Manager, perform such Work in accordance with the revised specifications.
 - b. The standard specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Construction Manager will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.
 - c. Procurement of reference standards and standard specifications is the sole responsibility of Contractor.
8. Absence of Modifiers. In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another shall not affect the interpretation of either statement.

C. Rules of Document Interpretation.

1. In the event of conflict within the drawings, the following rules shall apply:
 - a. General Notes, when identified as such, shall be incorporated into other portions of Drawings.
 - b. Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.
 - c. Larger scale drawings shall take precedence over smaller scale drawings.
 - d. Figured, derived, or numerical dimensions shall govern. At no time shall Contractor base construction on scaled drawings.
2. Specifications shall govern as to materials, workmanship, and installation procedures.
3. In the case of disagreement or conflict between or within standards, specifications, and drawings, the more stringent, higher quality, and greater quantity of Work shall apply.

1.09 EXISTING UTILITIES

- A. It is recognized by Construction Manager and Contractor that the location of existing utility facilities as shown on Contract Drawings and Specifications are approximate; their exact location is unknown.
- B. Recognition is given to the fact that there may be additional utilities existing on the property unknown to either party to the Contract. Location of utilities as shown on Drawings and Specifications represent the best information obtainable from utility maps and other information furnished by the various agencies involved. County warrants neither the accuracy nor the extent of actual installations as shown on the drawings and specifications.
- C. Because of this uncertainty, it may become necessary to make adjustments in the line or grade of underground utilities. Installation of such adjusted lines shall be made at the regular unit price bid for the work, and no additional compensation will be paid therefore, unless the scope and character of the work has been changed.
- D. Contractor shall coordinate and fully cooperate with Construction Manager and utility owners to locate, relocate and protect utilities. Contractor's attention is directed to the existence of utilities, underground and overhead necessary for all buildings within the area of work. Prior to start of trenching operations, Contractor shall meet with Construction Manger to fully review known utility locations, which may affect the work.
- E. In the event Contractor discovers utilities not identified in the Contract Drawings or Specifications, Contractor shall immediately notify Construction Manager and the utility owner by the most expeditious means available and later confirm in writing.

1.10 EXISTING CONDITIONS

- A. Intent of the Drawings is to show existing conditions with information developed from field surveys and County's records, and to generally show the extent and type of work required to prepare the existing areas for new work. The information shown on the Drawings is not a guarantee of existing conditions.

1.11 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Construction Manager promptly.
- B. General: If applicable to Contractor's Work, engage a land surveyor or other qualified professional to lay out the Work using accepted surveying practices. Establish benchmarks and control points to set lines and grades for construction and elsewhere as needed to locate each element of the Work.
- C. Contractor shall:
 - 1. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 2. Inform installers of lines and grades to which they must comply.
 - 3. Check the location, grade and plumb, of every major element as the Work progresses.
 - 4. Notify Construction Manager when deviations from required lines and grades exceed allowable tolerances.
 - 5. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- D. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and grades. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Construction Manager.

1.12 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- C. Certified Survey: On completion of major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

1.13 INSTALLATION.

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated. Make vertical work plumb and make horizontal work level. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels (refer to attached Mitigated Negative Declaration filed December 17, 2020).
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field-installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Where mounting heights are not indicated, mount components at heights directed by Architect or Engineer.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

1.14 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to the area defined by project boundaries. Do not disturb portions of Project site beyond areas in which the Work is indicated, or as may be further defined by the Waste Management Department.

1.16 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - a. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by County or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Construction Manager and County not less than **two (2)** days in advance of proposed utility interruptions.
 - 2. Obtain Construction Manager's written permission before proceeding with utility interruptions.
 - 3. Contractor's impairment coordinator shall keep permanent records of systems out of service.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to County occupancy with Construction Manager.
 - 1. Notify Architect, Construction Manager and County not less than **seven (7)** days in advance of proposed disruptive operations.
 - 2. Obtain County's written permission before proceeding with disruptive operations.
- D. Earthwork activities on the Phase I waste management unit may not proceed until the osprey nests are clear of offspring. This typically occurs no later than June 1 of each year.
- E. Nonsmoking Site Construction Area: Smoking is not permitted within the site construction areas.
- F. Controlled Substances: Use of tobacco products, alcohol, and/or controlled substances within the site construction area is not permitted.
- G. Employee Identification: County will provide identification tags for Contractor personnel working on Project site. Contractor shall require personnel to use identification tags at all times.

1.17 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS

2.01 REFERENCE STANDARDS

For products specified by association or trade standards, comply with requirements of standards, except where more rigid requirements are specified or are required by applicable codes.

2.02 PRODUCTS OR SERVICES ORDERED IN ADVANCE

County furnished products listed in **subsection 2.03** below will be procured under separate contracts and provided by County or vendor to Contractor for installation. Contractor shall provide utility service and stub out connections as necessary for the installation of County furnished products.

2.03 COUNTY FURNISHED PRODUCTS

A. Not Used.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

SECTION 01 11 00 SUMMARY OF WORK
ATTACHMENT "A"

**BEFORE THE BOARD OF SUPERVISORS OF THE
COUNTY OF AMADOR, STATE OF CALIFORNIA**

IN THE MATTER OF:

RESOLUTION PROVIDING FOR THE)	RESOLUTION NO. 20-159
CERTIFICATION OF THE MITIGATED)	
NEGATIVE DECLARATION AND FINDING OF)	
NO SIGNIFICANT IMPACT FOR THE BUENA)	
VISTA LANDFILL PHASE 1 FINAL COVER)	
RE-CONSTRUCTION, AND CLASS II SURFACE)	
IMPOUNDMENT EXPANSION & LINER)	
REPLACEMENT PROJECT)	

WHEREAS, the County of Amador is undertaking a project at the Buena Vista Landfill site including the reconstruction of the final cover on Waste Management Unit 1 and the expansion of the Class II Surface impoundment, and

WHEREAS, the County of Amador is utilizing State Revolving Fund financing to fund the projects, and

WHEREAS, the County of Amador is required to perform an Environmental Assessment and Initial Study of the project as a requirement of the funding agency,

NOW, THEREFORE BE IT RESOLVED, by the Board of Supervisors of the County of Amador, State of California, that said Board does hereby certify the Mitigated Negative Declaration and Finding of No Significant Impact for the Buena Vista Landfill Phase 1 Final Cover Re-Construction, and Class II Surface Impoundment Expansion & Liner Replacement.

The foregoing resolution was duly passed and adopted by the Board of Supervisors of the County of Amador at a regular meeting thereof, held on the 15th day of December, 2020, by the following vote:

AYES: Patrick Crew, Frank U. Axe, Richard M. Forster, Jeff Brown, Brian Oneto

NOES:

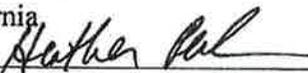
ABSENT:



Patrick Crew, Chairman, Board of Supervisors

ATTEST:

JENNIFER BURNS, Clerk of the
Board of Supervisors, Amador County,
California Deputy

By  _____

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X". If you have already sent your document to the agency please denote that with an "S".

- | | |
|--|--|
| <input checked="" type="checkbox"/> Air Resources Board | <input type="checkbox"/> Office of Historic Preservation |
| <input type="checkbox"/> Boating & Waterways, Department of | <input type="checkbox"/> Office of Public School Construction |
| <input type="checkbox"/> California Emergency Management Agency | <input type="checkbox"/> Parks & Recreation, Department of |
| <input type="checkbox"/> California Highway Patrol | <input type="checkbox"/> Pesticide Regulation, Department of |
| <input checked="" type="checkbox"/> Caltrans District # 10 | <input type="checkbox"/> Public Utilities Commission |
| <input type="checkbox"/> Caltrans Division of Aeronautics | <input checked="" type="checkbox"/> Regional WQCB # CV |
| <input type="checkbox"/> Caltrans Planning | <input type="checkbox"/> Resources Agency |
| <input type="checkbox"/> Central Valley Flood Protection Board | <input type="checkbox"/> Resources Recycling and Recovery, Department of |
| <input type="checkbox"/> Coachella Valley Mtns. Conservancy | <input type="checkbox"/> S.F. Bay Conservation & Development Comm. |
| <input type="checkbox"/> Coastal Commission | <input type="checkbox"/> San Gabriel & Lower L.A. Rivers & Mtns. Conservancy |
| <input type="checkbox"/> Colorado River Board | <input type="checkbox"/> San Joaquin River Conservancy |
| <input type="checkbox"/> Conservation, Department of | <input type="checkbox"/> Santa Monica Mtns. Conservancy |
| <input type="checkbox"/> Corrections, Department of | <input type="checkbox"/> State Lands Commission |
| <input type="checkbox"/> Delta Protection Commission | <input type="checkbox"/> SWRCB: Clean Water Grants |
| <input type="checkbox"/> Education, Department of | <input type="checkbox"/> SWRCB: Water Quality |
| <input type="checkbox"/> Energy Commission | <input type="checkbox"/> SWRCB: Water Rights |
| <input checked="" type="checkbox"/> Fish & Game Region # 2 | <input type="checkbox"/> Tahoe Regional Planning Agency |
| <input type="checkbox"/> Food & Agriculture, Department of | <input type="checkbox"/> Toxic Substances Control, Department of |
| <input type="checkbox"/> Forestry and Fire Protection, Department of | <input type="checkbox"/> Water Resources, Department of |
| <input type="checkbox"/> General Services, Department of | |
| <input type="checkbox"/> Health Services, Department of | <input checked="" type="checkbox"/> Other: California Integrated Waste Management (CalRecycle) |
| <input type="checkbox"/> Housing & Community Development | <input checked="" type="checkbox"/> Other: Local Tribes |
| <input type="checkbox"/> Native American Heritage Commission | |

Local Public Review Period (to be filled in by lead agency)

Starting Date September 8, 2020 Ending Date October 7, 2020

Lead Agency (Complete if applicable):

Consulting Firm: _____	Applicant: <u>County of Amador, Waste Management Department</u>
Address: _____	Address: <u>810 Court St.</u>
City/State/Zip: _____	City/State/Zip: <u>Jackson, CA 95665</u>
Contact: _____	Phone: <u>(209)223-6546</u>
Phone: _____	

Signature of Lead Agency Representative: *Krista Ruessel* Digitally signed by Krista Ruessel
Date: 2020.09.08 12:59:23 -0700 **Date:** 9/8/2020

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

1. **Special-Status Species –Animals (BIO-1):** Special-status animal species should be avoided to the maximum extent practicable. If complete avoidance is infeasible, project impacts will need to be quantified and mitigation developed to reduce the impacts to a less-than-significant level. Mitigation may include preservation and enhancement of on and/or off-site populations, transplanting individuals to a preservation area, or other actions, subject to the approval of CDFW, USFWS, or CNPS.
2. **Ground Disturbance Timing for Nesting Birds (BIO-2):** To avoid impacts to nesting bird species or birds protected under the Migratory Bird Treaty Act, all ground disturbing activities conducted between February 1 and September 1 must be preceded by a pre-construction survey for active nests, to be conducted by a qualified biologist. This survey should be conducted within two weeks prior to any construction activities. The purpose of this survey is to determine the presence or absence of nests in an area to be potentially disturbed. If nests are found, a buffer depending upon the species and as determined by a qualified biologist in consultation with the California Department of Fish and Wildlife and shall be demarcated with bright orange construction fencing. Any vegetation clearing should be schedule outside of the avian nesting season (February 1 through August 31) or survey should be conducted immediately prior to vegetation removal. If active nests are found, vegetation removal should be delayed until the young fledge. No ground disturbing or other construction activities shall occur within this buffer until the County approved biologist has confirmed that breeding/nesting is completed and the young have fledged the nest. Nesting bird surveys are not required for ground disturbing activities occurring between September 2 and January 31.
3. **Special-Status Species - Plants (BIO-3):** Special-status plant populations should be avoided to the maximum extent practicable. If complete avoidance is infeasible, project impacts will need to be quantified and mitigation developed to reduce the impacts to a less-than-significant level. Mitigation may include preservation and enhancement of on and/or off-site populations, transplanting individual plants to preservation area, or other actions, subject to the approval of CDFW, USFWS, or CNPS.
4. **Plant Survey (BIO-4):** Prior to any construction activity, a biological and/or rare plant survey shall be conducted to determine if there are any special-status plants within the project area and which may potentially be disturbed. Surveys shall be timed according to the blooming period for the target species, and known reference populations will be visited prior to surveys to confirm the species is blooming where known to occur. If special-status species are identified, avoidance zones may be established around plant populations to clearly demarcate areas for avoidance. Avoidance measures and buffer distances may vary between species, and the specific avoidance zone distance will be determined in coordination with the appropriate resource agencies. For individual specimens, highly visible temporary construction fencing shall be placed at least 10 ft. away from the drip line of the plant. No construction activity or grading would be permitted within the buffer zone. Where avoidance is infeasible, and the plant subject to removal or potential damage from construction, the project applicant shall develop and implement a mitigation plan pursuant to State and Federal regulation. The mitigation plan shall provide for no net loss of habitat and shall include, but is not limited to, relocation of the affected plants, replanting, and monitoring of relocated and planted specimens.
5. **Riparian and Wetland Conservation (BIO-5):** Compete avoidance of wetlands is conservatively recommended to ensure compliance with wetland laws. Site development shall implement erosion control plans, and best management practices (BMPs) that prevent the discharge of sediment into nearby drainage channels and wetlands. To the extent feasible, any intermittent creeks within the project vicinity shall be preserved, with a 50-foot buffer, limited to construction on either side of the creek. This buffer should be 50 feet in width on each side of the creek as measured from the edge of US Army Corps of Engineers jurisdiction. This mitigation measure shall not apply where it conflicts with hazardous site remediation required by orders from the Central Valley Regional Water Quality Control Board. If complete avoidance of potential jurisdictional Waters of the U.S. or wetlands is not practicable, a wetland delineation should be prepared and submitted to USACE for verification in order to determine the jurisdictional or nonjurisdictional nature of the seasonal wetlands and man-made drainage ditch. If jurisdictional areas will be impacted, wetland permits/and or certification should be obtained from USACE, CDFW, and the RWQCB prior to placement of any fill (e.g., a culvert, fill slope, rock) within potential Waters of the U.S.

Chapter 21. MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively are considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion/Conclusion/Mitigation:

A The project will not degrade the quality of the environment and no habitat, wildlife populations, and plant and animal communities would be significantly impacted by this project. All environmental topics are either considered to have "No Impact," "Less Than Significant Impact," or "**Less than Significant Impacts with Mitigation Incorporated.**"

Mitigation measures included with this Initial Study include the following, summarized:

- AES-1** Requiring that any installed lighting accompanying the proposed use and development must comply with General Plan Mitigation Measure 4.1-4;
- AES-2** Any security lighting for the ground facilities shall be shielded and directed in such a manner so as not to direct light onto neighboring properties/buildings/roadways. In an effort to minimize light pollution, all non-emergency lighting must be turned off by 11:00 p.m.;
- AIR-1** Air District's Rules and Regulations will be observed through the course of this project;
- BIO-1** Special Status Animal Species Mitigation plan will reduce biological impacts consistent with BMPs developed with CDFW and USFW;
- BIO-2** Ground Disturbance Timing for Nesting Birds, and Survey will be conducted prior to any construction;
- BIO-3** Special Status Plant Species Mitigation will be developed in conjunction with regulation by CDFW, USFW, and CNPS;

BUENA VISTA LANDFILL PROJECT 2020

- BIO-4** Plant Survey will be conducted prior to ground disturbance;
- BIO-5** Riparian and Wetland Conservation mitigation shall apply within the affected ranges of mapped riparian and wetland conservation regions;
- BIO-6** Pollution Discharge with Grading and Runoff shall be addressed by the submitted grading plan, produced by a licensed engineer;
- CULTR-1** Historic/Cultural Resources, if found, shall be protected consistent with General Plan Mitigation Measures 4.5-1 and 4.5-2;
- CULTR-2** Human Remains, if discovered, shall be protected consistent with General Plan Mitigation Measure 4.5-3.
- GEO-1** Grading Permits for 50 cubic yards or more shall be issued through the Amador Building Department, and must include plans prepared by a licensed engineer.
- GEO-2** On-Site sewage disposal shall be determined to meet the intended uses, with possible addition of chemical toilets to accommodate temporary increase in demand during construction;
- GHG-1** Fugitive Dust Control (Particulate Matter Emissions) with Construction shall be consistent with General Plan Mitigation Measure 4.3-1a;
- GHG-2** Exhaust Emission Reduction Measures shall be taken accompanying construction, consistent with General Plan Mitigation Measure 4.3-1b;
- HAZ-1** Hazardous Materials Upset and Release shall maintain compliance with the Unified Program, enforced through the Environmental Health Department;
- HAZ-2** Groundwater Monitoring Wells and Grading mitigation measures shall be taken to protect existing wells and groundwater supplies;
- HYD-1** Grading and Drainage Permits and Storm Flows shall be monitored through permitting with the Building Department;
- NOI-1** Construction activity and Groundborne Vibrations shall be minimized according to industry-standard BMPs and consistent with General Plan Mitigation Measure 4.11.
- TRA-1** The proposed project must comply with Fire and Life Safety Ordinance (Chapter 15.30 of Amador County Code) (Transportation and Traffic);

- B** In addition to the individually limited impacts discussed in the previous chapters of this Initial Study, CEQA requires a discussion of “cumulatively considerable impacts”, meaning the incremental effects of a project in connection with the effects of past, current, and probable future projects. These potential cumulatively considerable impacts may refer to those resulting from increased traffic to and from the general area, overall resource consumption, aesthetic and community character, and other general developmental shifts.

Evaluation of these potentially cumulative impacts may be conducted through two alternative methods as presented by the CA State CEQA Guidelines, the list method and regional growth projections/plan method. As this project is independent and unique to the County, the latter is most appropriately employed to evaluate an individual project’s contribution to potential cumulative significant impacts in conjunction with past, current, or reasonably foreseeable future projects. Thresholds of significance may be established independently for the project evaluated depending on potentially cumulative impacts particular to the project under review, but shall reference those established in the 2016 General Plan EIR and be supplemented by other relevant documents as necessary. According to CEQA Guidelines §15064.7, thresholds of significance may include environmental standards, defined as “(1) a quantitative, qualitative, or performance requirement found in an ordinance, resolution, rule, regulation, order, plan, or other environmental requirement; (2) adopted for the purpose of

environmental protection; (3) addresses the environmental effect caused by the project; and, (4) applies to the project under review" (CEQA Guidelines §15064(d)). CEQA states that an EIR may determine a project's individual contribution to a cumulative impact, and may establish whether the impact would be rendered less than cumulatively considerable with the implementation of mitigation or reduction strategies. Any impacts would only be evaluated with direct associations to the proposed project. If cumulative impacts when combined with the impact product of the specific project are found to be less than significant, minimal explanation is required. For elements of the environmental review for which the project is found to have no impact through the Initial Study, no additional evaluation of cumulative impacts is necessary.

No past, current, or probable future projects were identified in the project vicinity that, when added to project-related impacts, would result in cumulatively considerable impacts. The intent of the project is to stabilize impacts of an existing use and project. The proposed project is not inconsistent with the Amador County General Plan and no cumulatively considerable impacts would occur with development of the proposed project. **Impacts would be less than significant with mitigation incorporated.**

- C There have been no impacts discovered through the review of this application demonstrating that there would be substantial adverse effects on human beings directly or indirectly relating the project. As this project is implemented in order to reduce negative environmental impacts which would result from inaction, this project would reduce potential impacts, and any additional environmental impacts introduced through this project are either mitigated to a less than significant level or are otherwise less substantial than environmental impacts stemming from inaction or a no-project alternative. Therefore, there is a **less than significant impact with mitigation.**

Sources: Chapters 1 through 21 of this Initial Study.

References: Amador County General Plan; Amador County General Plan EIR; Amador Air District; Amador County Municipal Codes; Fish & Wildlife's IPAC and BIOS databases; Migratory Bird Treaty Act; California Native Plant Society; California Air Resources Board; California Department of Conservation; Migratory Bird Treaty Act; California Department of Forestry and Fire Protection; California Geologic Survey: Alquist-Priolo Earthquake Fault Zones; State Department of Mines & Geology; Superfund Enterprise Management System Database (SEMS); Department of Toxic Substances Control Envirostor Database; Geotracker; Amador County GIS; Amador County Zoning Map; Amador County Municipal Codes; Amador County Soil Survey; California Native American Heritage Commission; Amador Fire Protection District; California Air Resources Board (ARB); California State Water Resources Control Board (CSWRCB); California Stormwater Quality Association (CASQA); California Environmental Quality Act 2019 Guidelines (CEQA); California Public Resources Board; Caltrans District 10 Office of Rural Planning; Amador County Important Farmland Map, 2016; Commenting Department and Agencies; Beckett Archeological Consulting- La Mesa Cultural Resources Report (2020); Amador County Community Development Agency and Departments. All sources cited herein are available in the public domain, and are hereby incorporated by reference.

NOTE: Authority cited: Sections 21083, 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080, 21083.05, 21095, Pub. Resources Code; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal. Appl. 4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal. App. 4th at 1109; *San Franciscans Upholding the Downtown Plan v. city and County of San Francisco* (2002) 102 Cal. App. 4th 656.

Central Valley Regional Water Quality Control Board

6 October 2020

Krista Ruesel
County of Amador
Planning Department
810 Court Street
Jackson, CA 95642

COMMENTS TO REQUEST FOR REVIEW FOR THE MITIGATED NEGATIVE DECLARATION, BUENA VISTA LANDFILL PHASE 1 FINAL COVER RE-CONSTRUCTION, AND CLASS II SURFACE IMPOUNDMENT EXPANSION & LINER REPLACEMENT PROJECT, SCH#2020090156, AMADOR COUNTY

Pursuant to the State Clearinghouse's 8 September 2020 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Mitigated Negative Declaration* for the Buena Vista Landfill Phase 1 Final Cover Re-Construction, and Class II Surface Impoundment Expansion & Liner Replacement Project, located in Amador County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of

KARL E. LONGLEY SCD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:

https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_2018_05.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at:

https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

If you have questions regarding these comments, please contact me at (916) 464-4856 or Nicholas.White@waterboards.ca.gov.



Nicholas White
Water Resource Control Engineer

cc: State Clearinghouse unit, Governor's Office of Planning and Research,
Sacramento

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 14 00

WORK RESTRICTIONS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section describes special work restrictions to be followed by Contractor.
- B. Related Sections: **Section 01 11 00** (Summary of Work)

1.02 SECURITY REQUIREMENTS

- A. Items NOT allowed on the grounds include the following:
 - 1. Alcohol, drugs or tobacco (any form)
 - 2. Lighters
 - 3. Weapons (any kind)

1.03 CONTRACTOR'S USE OF THE SITE; ACCESS

- A. Use of Site: Contractor shall limit use of premises to areas indicated by Construction Manager or CQA Officer and necessary for performance of the Work. Contractor shall not disturb portions of the site beyond areas in which the Work is indicated.
- B. Contractor shall limit its use of the Site for work and storage to allow for work by other contractors or forces.
- C. Any existing driveways, fire lanes and entrances serving the Site will be managed by Construction Manager. Contractor will keep existing driveways and entrances clear of obstructions and available to other contractors at all times. Do not use these areas for parking or storage or materials.
- D. Contractor shall not unreasonably encumber the site with materials or equipment. Contractor shall confine stockpiling of materials and location of storage sheds to area approved by Construction Manager. If additional storage is necessary, Contractor shall obtain and pay for such storage off site without additional expense to Construction Manager.
- E. Contractor shall not overload structures with weight that will endanger them.
- F. Contractor shall assume full responsibility for protection and safekeeping of material and tools stored at the site; and lock automotive type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Contractor shall not leave vehicles or equipment unattended with the motor running or the ignition key in place.
- G. Contractor shall move any stored products, temporary facilities, controls or fencing, under Contractor's control, that interfere with operations of County, Construction Manager or other Contractors, on or off the Site, without cost to Construction Manager or County.
- H. Contractor shall cooperate with Construction Manager and governing authorities to minimize noise and disturbance and observe all local ordinances for time of work.
- I. In entrance and exit of all workmen and in bringing in, storing and removal of equipment, Contractor shall avoid unnecessary dust, mud or accumulated debris, or undue interference with the convenience, sanitation or routine of Construction Manager's activities.
- J. In connecting new utilities to existing, and similar operations, Contractor shall time and coordinate such operations so that there will be no interference with Construction Manager's or County's activities.
- K. Contractor shall protect improvements on adjoining properties as well as those on the Site.
- L. Contractor shall restore any improvements damaged in performing the Work to their original condition as acceptable to the Construction Manager or County.

- M. Contractor shall not interfere with use of adjacent buildings but shall maintain free and safe passage to and from those buildings.
- N. In the performance of the Work, Contractor shall be responsible for safety and support of structure(s). Contractors shall cease operations and notify Construction Manager immediately if Contractor's Work operations endanger the safety of structure(s). Precautions to properly support structure(s) should be taken prior to start of Work. Do not resume operations until safety is restored. Contractor shall assume liability for such movement, settlement, damage or injury.
- O. Contractor shall provide, erect and maintain barricades and guard rails as required by governing regulatory agencies to protect the public, occupants of building(s), and workers.
- P. Where demolition, removal or rework occurs, Contractor shall take all necessary precautions to protect existing finished work remaining in place from damage. Finished work damaged by operations under this Contract shall be repaired or replaced to the satisfaction of Construction Manager and County at no extra cost to County.
- Q. Construction staging areas, storage areas, access, parking, Site use, etc. must be acceptable to County and the Construction Manager at all times. Site access and use will be limited. At no times shall public roads or sidewalks be blocked.
- R. Driveways and Entrances: Contractor shall keep driveways, entrances, and fire access roads clear and available to County, County's employees, and emergency vehicles at all times. Contractor shall not use these areas for parking or storage of materials.
 - 1. Contractor shall schedule deliveries to minimize use of driveways and entrances.
 - 2. Contractor shall schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- S. Parking: Designated Contractor parking areas will be assigned. All vehicles should be locked as the County cannot guarantee observation of Contractor or public vehicles.
- T. Contractor shall confine operations on the Site to areas indicated in the Contract Documents and as directed by Construction Manager. Portions of the Site beyond areas on which Work is indicated are not to be disturbed. Contractor shall conform to Site rules and regulations affecting the Work while engaged in project construction.
- U. Coordination: The Contractor's Representative and the CQA Officer shall meet at the beginning of each day to discuss that day's events and future events. These meetings will be the forum wherein issues regarding utilities, water and other significant items will be reviewed and discussed to provide for a smooth transition.
 - 1. Utilities shall not be turned off to the facility without 24 hours notice. Utilities shall not be kept off for more than a 1-hour period.

1.04 OSPREY NESTING PLATFORMS

- A. Osprey nesting platforms are located on power supply pole in the vicinity of the Class III Phase I Waste Management Unit. Nesting birds and their offspring shall not be disturbed until fledging offspring have taken flight and left the nests.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART I GENERAL

1.01 SUMMARY

- A. Procedures are described for selecting products and requesting substitutions of unlisted materials in lieu of materials named in the Specifications or approved for use in Addenda.
- B. Related Sections
 - 1. **Section 01 26 00** (Contract Modification Procedures)
 - 2. **Section 01 33 00** (Submittal Procedures)

1.02 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standard: Select any product meeting that standard.
- B. For products specified by naming one or more products or manufacturers:
 - 1. Select products of any named manufacturer meeting specifications.
 - 2. For any product or manufacturer which is specifically named submit Request for Substitution (RFS).
 - 3. For specified products accompanied by the words "Basis of Design," submit specified item or any product having significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics equal or exceeding the specified product.

1.03 SUBSTITUTIONS

- A. Within a period of **thirty-five (35)** days after Award of Contract, the Construction Manager will consider RFS from Contractor. After that period, requests will be considered only when product becomes unavailable due to no fault of Contractor. Requests for review of proposed substitute items will not be accepted from anyone other than Contractor. The RFS will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice Contractor's achievement of Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with County for Work on the Project).
- B. Submit separate RFS for each product and support each request with:
 - 1. Product identification
 - 2. Manufacturer's literature
 - 3. Samples, as applicable
 - 4. Name and address of similar projects on which product has been used, and date of installation
 - 5. Name, address and telephone number of manufacturer's representative or sales engineer
- C. Itemize a comparison of the proposed substitution with product specified and list significant variations. If variation from product specified is not pointed out in Submittal, variation will be rejected even though Submittal was favorably reviewed.
- D. State whether the substitute will require a change in any of the Contract Documents (or provisions of the work of any other Contractor on the Project) to adapt the design of the proposed substitute, and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. Submit data relating to changes in the Master Project Schedule.
- E. Identify in the RFS (i) all variations of the proposed substitute from that specified, and (ii) available maintenance, repair and replacement service.
- F. Include accurate cost data comparing the proposed substitution with product and amount of net change in Contract Price, including but not limited to an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute (including costs of redesign and claims of other contractors affected by the resulting change), all of which will be considered by Construction Manager in evaluating the proposed substitute. Construction Manager may require Contractor to furnish additional data about the proposed substitute.
- G. Substitutions will not be considered for acceptance when:

1. They will result in delay meeting construction milestones or completion dates.
 2. They are indicated or implied on submittals without formal request from Contractor.
 3. They are requested directly by Subcontractor or supplier.
 4. Acceptance will require substantial revision of Contract Documents.
 5. They disrupt Contractor's job rhythm or ability to perform efficiently.
- H. Substitute products shall not be ordered without written acceptance of the Construction Manager.
- I. Construction Manager will determine acceptability of proposed substitutions and reserve the right to reject proposals due to insufficient information.
- J. Accepted substitutions will be evidenced by a Change Order or Supplemental Instruction. All Contract requirements apply to Work involving substitutions.

1.04 CONTRACTOR'S REPRESENTATION AND WARRANTY

- A. Requests constitute a representation and warranty that Contractor:
1. Has investigated the proposed product and determined that it meets or exceeds, in all respects, specified product.
 2. Will provide the same warranty for substitution as for specified product.
 3. Will coordinate installation and make other changes which may be required for the Work to be complete in all respects.
 4. Waives claims for additional costs which may subsequently become apparent.
 5. Will be responsible for Master Project Schedule slippage due to substitution.
 6. Will be responsible for Master Project Schedule delay due to late ordering of available specified products caused by requests for substitution which is subsequently rejected by the Construction Manager.
 7. Will compensate County for all costs; including extra costs of Contract, extra cost to other contractors, and any claims brought against County, caused by late requests for substitutions or late ordering of products.

1.05 CONSTRUCTION MANAGER'S DUTIES

- A. Review Contractor's RFS with reasonable promptness.
- B. Notify Contractor in writing of decision to accept or reject requested substitution.

1.06 COST OF REVIEW

- A. Construction Manager will record the time required in evaluating substitutes proposed or submitted by Contractor whether or not Construction Manager accepts the substitute item so proposed or submitted by Contractor. Contractor shall reimburse County for the charges of the Construction Manager for evaluating each such proposed substitute item.
- B. County at its sole discretion may waive the requirement of paragraph A above.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes general procedural requirements for alterations, modifications and extras.
- B. Related Sections
 - 1. **Section 01 11 00** (Summary of Work)
 - 2. **Section 01 29 00** (Payment Procedures)
 - 3. **Section 01 25 00** (Substitution Procedures)

1.02 GENERAL

- A. Changes in the Work or deviations from the Contract Documents (including the Drawings or Specifications) may be initiated only by Contractor or Construction Manager.
- B. Contractor may initiate requests for changes by submitting Requests for Information (RFI), Requests for Substitution (RFS), Notice of Concealed or Unknown Conditions, or Notice of Hazardous Waste Conditions.
 - 1. RFIs shall be submitted to seek clarification of the Contract Documents. With respect to drawings and specifications provided by Contractor under this Contract, RFIs shall be submitted to seek clarification of County directed changes or action upon the drawings or specifications.
 - 2. RFSs shall be submitted in accordance with the **General Conditions** and **Section 01 25 00** (Substitution Procedures) to request substitution of materials or methods of execution.
 - 3. Notices of Concealed or Unknown Conditions shall be submitted in accordance with **General Conditions subsection 1.13.D**.
 - 4. Notices of Hazardous Waste Conditions shall be submitted in accordance with **General Conditions subsection 1.13.E**.
 - 5. Contractor shall be responsible for its costs to implement and administer RFIs and RFSs throughout the Contract duration. Regardless of the number of RFIs submitted, Contractor will not be entitled to additional compensation by virtue of the same. Contractor shall be responsible for County's administrative costs (including those of its consultants) for answering its RFIs where the answer could reasonably be found by reviewing the Contract Documents, as determined by County; and such costs will be deducted from progress payments.
- C. Construction Manager may initiate changes by issuing a Supplemental Instruction.
- D. Construction Manager may initiate changes by issuing Requests for Pricing (RP) to Contractor. Such RP will detail all proposed changes in the Work and request a quotation of changes in the Contract Price and the Contract Time from Contractor.

1.03 PROCEDURE

- A. Contractor shall submit each RFI to the Construction Manager. Contractor shall reference each RFI to activity of the Master Project Schedule and shall note time criticality of the RFI, indicating the time within which a response is required so as not to delay the Work. Construction Manager shall respond by issuing a Clarification where appropriate.
 - 1. RFIs submitted to Construction Manager by Contractor shall be specific to one item or issue for each RFI and shall be dated and signed by the Contractor.
 - 2. Contractor shall not submit RFIs for information that is reasonably ascertainable from the Contract Documents. County and Construction Manager shall be under no obligation to respond to any such RFI requesting information ascertainable from the Contract Documents or other reasonably obvious avenues of information available to Contractor.
 - 3. For valid RFIs, Construction Manager shall diligently acquire information as soon as possible for Contractor. Under no circumstances shall Contractor have the right to claim additional costs, delay or time as a result of waiting for an RFI response from County or Construction Manager.

4. Contractor or Subcontractors submitting frivolous RFI's or unsubstantiated claims for delay or damages shall be penalized as follows: For each frivolous RFI or unsubstantiated claim (defined as a request for information determined by the Construction Manager to be included with sufficient clarity in the Contract Documents or otherwise ascertainable by a competent contractor without further clarification), County may back charge Contractor in the amount of two hundred dollars (\$200.00) as partial compensation for the time spent to research the request.
 5. If Contractor is satisfied with the Clarification and does not request a change in the Contract Price or the Contract Time, then the Clarification shall be executed without a Change Order.
 6. If Contractor believes that the Clarification results in a change in the Contract Price or the Contract Time, Contractor shall notify the Construction Manager who may then either deny the request for change or issue an RP.
- B. Contractor shall submit each RFS to Construction Manager, who may either deny the request or issue an RP.
- C. Contractor shall submit all Notices of Concealed or Unknown Conditions to resolve unanticipated conditions incurred in the execution of the Work following the procedures in **General Conditions subsection 1.13.D**. If Construction Manager determines that a change in Contract Price or Contract Time is justified, Construction Manager shall issue an RP.
- D. Contractor shall submit all Notices of Hazardous Waste Conditions to resolve problems regarding hazardous materials encountered in the execution of the Work following the procedures in **General Conditions subsection 1.13.E**. If Construction Manager determines that a change in the Contract Price or Contract Time is justified, Construction Manager shall issue an RP.
- E. Construction Manager may issue Supplemental Instruction to Contractor.
1. If Contractor is satisfied with the Supplemental Instruction and does not request change in the Contract Price or the Contract Time, and the Supplemental Instruction does not substantially change the Drawings or Specifications, then the Supplemental Instruction shall be executed without a Change Order.
 2. If Contractor believes that the Supplemental Instruction results in a change in the Contract Price or the Contract Time, Contractor shall notify Construction Manager within **ten (10) business days**. Construction Manager may then either deny the request for change, cancel the Clarification or issue a RP.
- G. Contractor shall respond to Construction Manager's RP within **fifteen (15) business days** by furnishing a complete breakdown of costs of both credits, deducts, time extensions or contractions, and extras; itemizing materials, labor, taxes, overhead and profit. Subcontract work shall be so indicated.
- H. Upon approval of an RP, the Project Manager or the Construction Manager will issue or cause to be issued a Change Order directing Contractor to proceed with the extra work.
- I. Payment shall be made as follows:
1. Change Orders that increase the Contract Price or the Contract Time shall be in a form approved by the County, signed by Project Manager or the Board as appropriate, and accepted by Contractor.
 2. Payment shall be made for Change Order work along with other Work in a progress payment following completion of the Change Order work. Partial completion of Change Order work shall be paid for that part completed during the period covered by the monthly payment request.
- J. Project Manager shall always have the right to issue a written directive to Contractor to proceed with extra work in accordance with the provisions of **subsection 1.06** below. Such written directive shall be issued on a form approved by the County.

1.04 COST DETERMINATION

- A. Total cost of extra work shall be the sum of labor costs, material costs, equipment rental costs and specialist costs as defined herein plus overhead, and profit as allowed herein. This limit applies in all cases of claims for extra work, whether calculating Change Orders, RPs or calculating claims 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 shall keep and present daily, in such form as Construction Manager may prescribe, an itemized accounting together with appropriate invoices and other supporting data of the labor, materials, and equipment used during that day for the extra work. **No costs will be allowed for time not recorded and signed the same day the extra work takes place.** Contractor and Construction Manager shall discuss and attempt to resolve any disputes concerning Contractor's daily records at the time the report is submitted. No other costs arising out of or connected with the performance of extra work, of any nature, may be claimed or recovered by Contractor. No special, incidental or consequential damages may be claimed or recovered against County, Architect or Engineer, or Construction Manager, or their representatives or agents, whether arising from breach of contract, negligence or strict liability, unless specifically authorized in the Contract Documents.
- B. Overhead and Profit

1. Markup for overhead and profit on labor for extra work shall be Ten Percent (10%).
 2. Markup for overhead and profit on materials for extra work shall be Ten Percent (10%).
 3. Markup for overhead and profit on equipment rental for extra work shall be Ten Percent (10%).
 4. When extra work is performed by a first tier Subcontractor, Contractor shall receive a five percent (5%) markup on Subcontractors' total costs of extra work.
 5. When extra work is performed by a lower tier Subcontractor, Contractor shall receive a five percent (5%) markup on the lower tier Subcontractors' total costs of extra work. Contractor and Subcontractors shall divide the markup as mutually agreed.
- C. Taxes. Amador County Sales Tax, Federal and Excise Tax, State and all other Taxes shall be included.
- D. Contractor or Subcontractor Owned and Operated Equipment. When Contractor or Subcontractor owned and operated equipment is used to perform extra work, Contractor will be paid for equipment and operator as follows:
1. Payment for equipment will be made in accordance with **subsection 1.05.C.** below.
 2. Payment for cost of labor will be made at actual wages, which shall be no more than rates of such labor established by collective bargaining agreements for the type of worker and location of work, whether or not owner-operator is actually covered by such an agreement.

1.05 COST BREAKDOWN

- A. Labor: Contractor will be paid cost of labor for workers (including forepersons when authorized by the Construction Manager) used in the actual and direct performance of extra work. The labor rate, whether employer is Contractor, Subcontractor or other forces, will be actual wages paid including any employer payments to or on behalf of workers for wages and health and welfare, pension, vacation and similar purposes.
- B. Material: Only the cost of materials furnished by Contractor and necessarily used in performance of extra work will be paid. The cost of such materials will be cost, including sales tax, to purchaser (Contractor, Subcontractor or other forces) from supplier thereof, except as the following are applicable:
1. If a cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to County notwithstanding the fact that such discount may not have been taken.
 2. For materials salvaged upon completion of extra work, the salvage value of materials shall be deducted from cost, less discount, of materials.
 3. If the cost of material is, in the opinion of the Construction Manager, 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 the Site, less any discounts as provided in subparagraph 1 above.
- C. Equipment Rental
1. For Contractor or Subcontractor-owned equipment, payment will be made at reasonable rental rates for the Amador County area, but in no event greater than the actual cost.
 2. For rented equipment, payment will be made based on actual rental invoices. Equipment used on extra work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, the cost of use of equipment shall be calculated at the rental rate for equipment of proper size and type. Rental rates paid shall be deemed to cover the cost of supplies, small tools, necessary attachments, maintenance of any kind, depreciation, storage, insurance, and all incidentals. 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 and having a replacement value of one hundred dollars (\$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 or due to delays for which County is not responsible.
 3. For equipment on site, rental time to be paid for equipment shall be the time equipment is in actual operation on extra work being performed or on standby as approved by Construction Manager. The following shall be used in computing rental time of equipment:
 - a. When hourly rates are listed, less than thirty (30) minutes of operation shall be considered to be no more than one-half (1/2) hour of operation.
 - b. When daily rates are listed, less than four (4) hours of operation shall be considered to be no more than **one-half (1 /2)** day of operation.
 4. For equipment that must be brought to the Site to be used exclusively on extra work:
 - a. County 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.
 - d. Payment for transporting and loading and unloading equipment as above provided will not be made if equipment is used on Work in any other way than upon extra work.
 5. The rental period shall begin at the time equipment is unloaded at the site of extra work and terminate at the end of the day on which the Construction Manager directs Contractor to discontinue use of the equipment. Excluding Saturdays, Sundays, and legal holidays, unless the equipment is used to perform extra work on such days, rental time to be paid per day shall not exceed four (4) hours for zero (0) hours of operation, six (6) hours for four (4) hours of operation and eight (8) hours for eight (8) hours of operation, time being prorated between these parameters. Hours to be paid for equipment which is operated less than eight (8) hours due to breakdowns, shall not exceed eight (8) less the number of hours equipment is inoperative due to breakdowns.
- D. Work Performed by Special Forces or Other Special Services: When County and Contractor, by agreement, determine that a special service or item of extra work cannot be performed by forces of Contractor or those of any Subcontractors, the service or extra work item may be performed by a specialist. Invoices for a service or item of extra work on the basis of current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with established practice of the involved special service industry to provide a complete itemization. In those instances, wherein, Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the Site, charges for that portion of extra work performed in such facility may, by agreement, be accepted as a specialist billing. Construction Manager must be notified in advance of all off-site work. To the specialist invoice price, less credit to County for any cash or trade discount offered or available, whether or not such discount may have been taken, will be added ten percent (10%) in lieu of overhead and profit provided in **subsection 1.04.B** above.

1.06 FORCE-ACCOUNT

- A. If it is impracticable because of nature of work, or for any other reason, to fix an increase or decrease in price definitely in advance, Contractor may be directed to proceed at a not-to-exceed (NTE) maximum price which shall not under any circumstances be exceeded. Subject to such limitation, such extra work shall be paid for at actual necessary cost for Force-Account Work or at the negotiated cost, as determined by County. The cost for Force-Account Work and Field Directive Work shall be determined pursuant to **subsection 1.04** above.
- B. Force Account Work and Field Directive Work shall be used when it is not possible or practical to price out the changed work prior to the start of that work. In these cases, either Force Account Work or Field Directive Work will be utilized during the pricing and negotiation phase of the change. Once negotiations have been concluded and a bilateral agreement has been reached, the tracking of the Work under Force Account is no longer necessary. Force Account Work shall also be used when negotiations between County and Contractor have broken apart and a bilateral agreement on the value of the changed work cannot be reached. Other uses of Force Account Work and Field Directive Work may be approved by Project Manager.
- C. Whenever any Force-Account Work is in progress, a definite price for which has not been agreed on in advance, Contractor shall report to Construction Manager each day in writing in detail amount and cost of labor and material used, and any other expense incurred in Force-Account Work on the preceding day as required herein. No claim for compensation for Force-Account Work will be allowed unless such report is made.
- D. Whenever Force-Account Work and Field Directive Work is in progress, a definite price for which has not been agreed on in advance, Contractor shall report to Construction Manager when 75% of the not-to-exceed amount has been expended.
- E. Force-Account Work and Field Directive Work shall be paid as extra work under this **Section 01 26 00**. Above described methods of determining payment for work and materials shall not apply to performance of work or furnishings of material which, in judgment of Construction Manager, may properly be classified under items for which prices are established in the Contract.

1.07 COUNTY

County reserves right to furnish materials as it deems advisable, and Contractor shall have no claims for costs and overhead and profit on such materials or for the coordination of the installation or incorporation of such materials in the Work but shall have a right to payment by Change Order for the actual cost of additional installation or incorporation of such materials above and beyond what is included in the Work.

1.08 OVERHEAD DEFINED

- A. The following constitutes charges that are included in overhead for all Contract Modifications, including Force Account Work:

1. Drawings: field drawings, shop drawings, etc. including submissions of drawings
2. Routine field inspection of the work proposed
3. General Superintendence
4. General administration and preparation of change orders
5. Computer services
6. Reproduction services
7. Salaries of Contractor's project manager, superintendent, timekeeper, storekeeper and secretaries
8. Janitorial services
9. Temporary on-site facilities
 - a. Offices
 - b. Telephones
 - c. Plumbing
 - d. Electrical: Power, lighting
 - e. Platforms
 - f. Fencing, etc.
10. Insurance and Bond premiums.
11. Procurement and use of vehicles and fuel used coincidentally in base contract work.
12. Surveying
13. Estimating
14. Protection of the work
15. Final cleanup
16. Other incidental work
17. All other indirect cost of the Work proposed

1.09 RECORDS AND CERTIFICATION

- A. Contractor shall keep and present daily, in such form as Construction Manager may prescribe, an itemized accounting together with appropriate invoices and other supporting data of the labor, materials, and equipment used during that day for the Force Account Work. **No costs will be allowed for time not recorded and signed the same day the Force Account Work takes place.** Contractor and Construction Manager shall discuss and attempt to resolve any disputes concerning Contractor's daily records at the time the report is submitted. Contractor or its authorized representative shall complete and sign the daily record. Construction Manager shall sign the form for approval. The form shall provide names and classifications of workers and hours worked by each, itemize materials used, and also list size type and identification number of equipment, and hours operated, and shall indicate work done by specialists.
- B. No payment for Force Account Work shall be made until Contractor submits original invoices substantiating materials and specialist charges.
- C. County 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 Force Account Work, as set forth in the **General Conditions**.
- D. Further, County shall have the right to audit, inspect, or copy all records maintained by Contractor in connection with this Contract, including financial records, in possession of Contractor relating to any transaction or activity occurring or arising out of, or by virtue of, the Contract. If Contractor is a joint venture, the right of County shall apply collaterally to the same extent to records of the joint venture, and of each individual joint venture member.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section describes requirements and procedures for determining amount of Work done and for obtaining payment for Work done.
- B. Related Sections.
 - 1. **Section 01 11 00** (Summary of Work)
 - 2. **Section 01 26 00** (Contract Modification Procedures)
 - 3. **Section 01 32 00** (Construction Progress Documentation)
 - 4. **Section 01 33 00** (Submittal Procedures)
 - 5. **Section 01 77 00** (Closeout Procedures)

1.02 REFERENCES

California Public Contract Code
California Government Code

1.03 SCOPE OF WORK

Work under the Contract, or under any allowance or alternate, shall include all design, engineering, labor, materials, transport, handling, storage, supervision, administration and all other items necessary for the satisfactory design, demolition, remodel, construction, completion, start-up and proper operation of the Work, whether or not expressly specified or shown.

1.04 DETERMINATION OF UNIT PRICE QUANTITIES

Quantity of Work to be paid for under any item for which a unit price is fixed in Contract or by Change Order shall be number, as determined by Construction Manager, of units of Work satisfactorily completed in accordance with the Contract Documents, Drawings and Specifications. Unless otherwise provided, determination of number of units of Work so completed will be based, so far as practicable, on actual measurement or count within prescribed or ordered limits, and no payment will be made for Work done outside of limits. Measurements and computations will be made by methods as Construction Manager may consider appropriate for the class of Work measured.

1.05 SCOPE OF PAYMENT

- A. Except as otherwise expressly stipulated in **Section 01 11 00** (Summary of Work) above, payment to Contractor at the price fixed in the Contract for performing the Work as may be adjusted pursuant to any approved Change Order, shall be full compensation for completing, in accordance with the Contract Documents, all Work required under the Contract, and for all expense incurred by Contractor for any purpose in connection with the performance and completion of the Work, including all incidental work necessary for completion of the Work.
- B. The Contract Price shall be deemed to include all costs associated with completion of the Work. Unless the Contract Documents expressly provide otherwise, the Contract Price shall be deemed to include:
 - 1. Any and all costs arising from any unforeseen difficulties that may be encountered during, and all risks of any description connected with, prosecution of Work until acceptance by County;
 - 2. All expenses incurred due to suspension, discontinuance, or termination of Work as provided in the Contract;
 - 3. Escalation to allow for cost increases between time of Contract Award and completion of Work.
- C. Whenever it is specified herein that Contractor is to do work or furnish materials of any class for which no price is fixed in the Contract, it shall be understood that Contractor is to do such work or furnish such materials without extra charge or allowance or direct payment of any sort, and that cost of doing work or furnishing materials is to be included in Contract Price, unless it is expressly specified herein, in particular cases, that work or material is to be paid for as extra work by way of Change Order.
- D. County shall not pay for materials or equipment not incorporated into the Work. Where Contractor requests payment on the basis of such materials and equipment not incorporated in the Work, County may deny such request in its discretion. If County in its discretion agrees to such payment, then Contractor must satisfy the following conditions:

1. Materials and/or equipment shall be delivered and suitably stored at the site or at another location agreed to in writing, for example, a mutually acceptable and fully bonded warehouse;
2. Full title to the materials and/or equipment shall vest in County at the time of delivery to the site, warehouse or other storage location, but Contractor remains fully responsible for the protection and proper installation of all materials and/or equipment, except that to be provided and/or installed by others on behalf of County;
3. Contractor shall obtain a negotiable warehouse receipt, endorsed over to County for materials and/or equipment stored in an off-site warehouse. No payment shall be made until such endorsed receipts are delivered to the Construction Manager;
4. Stockpiled materials and/or equipment shall be available for County's inspection. Materials and/or equipment shall be segregated and labeled or tagged to specifically identify this Contract;
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 its expense, Contractor shall insure the materials and/or equipment against theft, fire, vandalism, and malicious mischief, with insurance as 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 County has received the materials and equipment free and clear of all liens and encumbrances and evidence that the materials and equipment stored off site are covered by appropriate property insurance and other arrangements to protect County's interest therein, all of which must be satisfactory to County.

1.06 BASIS OF PAYMENT

- A. Fixed Price: Contractor shall perform all Work in accordance with the Contract Documents for a fixed price, which shall be the Contract Price or Sum.
- B. Guaranteed Maximum Price. If Contract calls for a Guaranteed Maximum Price:
 1. In the event that the sum of the actual Cost of the Work (including Contractor's profit) to complete the Project exceeds the Contract Sum, also referred to herein as the Guaranteed Maximum Price, County shall only be liable to Contractor for the payment of the amount of the Guaranteed Maximum Price. Contractor, at its sole cost and expense, shall complete the Project in compliance with the Contract Documents and shall pay promptly when due any and all sums in excess of the Guaranteed Maximum Price necessary to so complete the Work.
 2. The amounts of all increases, if any, during the term of this Contract in sales, use, excise or other taxes incurred by Contractor in connection with the performance of the Work, but excluding Contractor's federal and state income taxes, shall be included in the Contract Sum.
- C. Allowances: Not used.
- D. Payment for all Work included in the Contract Documents shall be included in the Contract Price, and no additional payments will be made for any incidental work.
- E. County does not expressly, or by implication, agree, warrant, or represent in any manner, that actual amount of the Work will correspond with amount shown or estimated and reserves the right to increase or decrease the amount of any class or portion of the Work, to leave out entire Work item or items, or to add work not included in Contract, when in its judgment such change is in the best interest of County. No change in the Work shall be considered a waiver of any other condition of the Contract. No claim shall be made for anticipated profit, for loss of profit, for damages, or for extra payment whatever, except as otherwise expressly provided for in Contract Documents, because of any differences between the amount of Work actually done and estimated amount as set forth herein, or for elimination of extra Work Items.

1.07 PROGRESS PAYMENTS

- A. If requested by Contractor, progress payments will be made monthly.
- B. Schedule of Values.
 1. Within **thirty (30)** days from issuance of Notice to Proceed and prior to the Contractor's application for the second progress payment, Contractor shall submit a detailed breakdown of its Contract Price by scheduled Work items and/or activities, including coordination responsibilities and Project Record Document responsibilities. This breakdown shall be referred to as the Schedule of Values. 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 the Schedule of Values of the total Contract Price, by assigning dollar values (cost estimates) to each applicable Master Project Schedule network activity, which cumulative sum equals the total Contract Price. The format and detail of the Schedule of Values shall be as directed by the Construction Manager to facilitate and clarify future progress payments to Contractor for all Contract Work.

- D. Contractor and each assignee under an assignment in effect at time of final payment shall execute and deliver the Release at the time of final payment and as a condition precedent to final payment, discharging County, its officers, agents, employees and consultants of and from liabilities, obligations, and claims arising under the Contract.
- E. Contractor shall provide a clear, detailed and accurately prepared Job Log and shall submit a copy to the Construction Manager for review prior to Final Payment. The Job Log shall contain a daily sign in sheet of every worker and their classification, pictures of the Work in progress, daily log describing the Work performed that day, list of every Subcontractor used, list of every vendor used, test results if applicable, copies of submittals, Material Safety Data Sheets, payroll, prevailing wage rates used, and As-Built drawings.

1.10 EFFECT OF PAYMENT

- A. Payment will be made by County, based on observations at the Site and the data comprising the Application for Payment. Payment will not be a representation that County has:
 - 1. Made exhaustive or continuous on-site inspections to check the quality or quantity of Work;
 - 2. Reviewed construction means, methods, techniques, sequences or procedures;
 - 3. Reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by County to substantiate Contractor's right to payment;
 - 4. Made examination to ascertain how or for what purpose Contractor has used money previously paid on account of the Contract Price; or
 - 5. Accepted the Work or waived any deficiencies in it or any claims with regard to it.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

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 County, all its respective agents, employees, 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.
8. Contractor hereby waives the provisions of California Civil Code Section 1542, which provides as follows:

A general release does not extend to claims, which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him, must have materially affected his 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 regulations, 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. All rights of County shall survive completion of the Work or termination of Contract, and execution of this Release.

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

COUNTY OF AMADOR

CONTRACTOR:

BY: _____
Chairman, Board of Supervisors

BY: _____
Principal

APPROVED AS TO FORM:

Name: (please print) _____

Title: _____

BY: _____
County Counsel

ATTEST:

JENNIFER BURNS, Clerk of the Board
Of Supervisors, Amador County, California

BY: _____

END OF DOCUMENT

ATTACHMENT B-2

**UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT
(CA CIVIL CODE § 8138)**

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

Identifying Information:

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect the following:

Disputed claims for extras in the amount of: \$ _____

SIGNATURE

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

ATTACHMENT B-3

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT
(CA CIVIL CODE § 8132)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT’S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information:

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release: This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant’s receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:
Date(s) of waiver and release: _____ Amount(s) of unpaid progress payment(s): \$ _____
- (4) Contract rights, including:
 - (A) a right based on rescission, abandonment, or breach of contract, and
 - (B) the right to recover compensation for work not compensated by the payment.

SIGNATURE

Claimant’s Signature: _____

Claimant’s Title: _____

Date of Signature: _____

ATTACHMENT B-4

**CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT
(CA CIVIL CODE § 8136)**

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information:

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

Disputed claims for extras in the amount of: \$ _____

SIGNATURE

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

ATTACHMENT B-5

PARTIAL REDUCTION / RELEASE OF STOP PAYMENT NOTICE - PUBLIC WORK
(CA Civil Code §§ 8044, 8128, 9300 et seq.)

TO:	PUBLIC ENTITY (CA Civ. Code §§ 8036)	DIRECT CONTRACTOR (CA Civ. Code § 8018)	CONSTRUCTION LENDER, if any (CA Civ. Code § 8006)
Name:	_____	_____	_____
Address:	_____	_____	_____
	_____	_____	_____

THE UNDERSIGNED, _____ (use correct legal name),

HEREBY PARTIALLY RELEASES AND ACKNOWLEDGES PARTIAL SATISFACTION OF THE STOP PAYMENT

NOTICE DATED _____, _____ (date),

WHICH WAS AT THAT TIME IN THE AMOUNT OF \$ _____, AGAINST _____

AS THE OWNER OF THE WORK OF IMPROVEMENT OR THE PUBLIC ENTITY, OR (IF APPLICABLE)
AGAINST

Contractor: _____

AS DIRECT CONTRACTOR FOR THE WORK OF IMPROVEMENT LOCATED AT THE FOLLOWING ADDRESS OR
SITE OTHERWISE DESCRIBED SUFFICIENTLY FOR IDENTIFICATION:

Address: _____

or Description: _____

THIS PARTIAL REDUCTION / RELEASE HEREBY REDUCES THE STOP PAYMENT NOTICE DESCRIBED ABOVE
BY THE SUM OF:

\$ _____,

AFTER CONSIDERATION OF THIS PARTIAL REDUCTION / RELEASE OF STOP PAYMENT NOTICE, THERE
SHALL REMAIN WITHHELD:

\$ _____,

Date: _____

Name of Claimant: _____
(Firm Name)

By: _____
(Signature of Claimant or Authorized Agent)

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.



STATE OF CALIFORNIA
COUNTY OF _____

On _____, _____ (date), before me,
_____, Notary Public (name and title of officer)
personally, appeared who proved to me on the basis of satisfactory evidence to
be the person(s) whose name(s) is/are subscribed to the within instrument and
acknowledged to me that he/she/they executed the same in his/her/their authorized
capacity(ies), and that by his/her/their signature(s) on the instrument the person(s),
or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California
that the foregoing paragraph is true and correct.

Witness my hand and official seal.

Signature

ATTACHMENT B-6

RELEASE OF STOP PAYMENT NOTICE IN ITS ENTIRETY - PUBLIC WORK
(CA Civil Code §§ 8044, 8128, 9300 et seq.)

TO:	PUBLIC ENTITY (CA Civ. Code §§ 8036)	DIRECT CONTRACTOR (CA Civ. Code § 8018)	CONSTRUCTION LENDER, if any (CA Civ. Code § 8006)
Name:	_____	_____	_____
Address:	_____	_____	_____
	_____	_____	_____

THE UNDERSIGNED, _____ (use correct legal name),

HEREBY PARTIALLY RELEASES AND FULLY DISCHARGES THE STOP PAYMENT NOTICE DATED

_____, _____ (date),

WHICH WAS AT THAT TIME IN THE AMOUNT OF \$ _____, AGAINST _____

AS THE OWNER OF THE WORK OF IMPROVEMENT OR THE PUBLIC ENTITY, OR (IF APPLICABLE) AGAINST

Contractor: _____

AS DIRECT CONTRACTOR FOR THE WORK OF IMPROVEMENT LOCATED AT THE FOLLOWING ADDRESS OR SITE OTHERWISE DESCRIBED SUFFICIENTLY FOR IDENTIFICATION:

Address: _____

or Description: _____

Date: _____

Name of Claimant: _____
(Firm Name)

By: _____
(Signature of Claimant or Authorized Agent)

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.



STATE OF CALIFORNIA
COUNTY OF _____

On _____, _____ (date), before me, _____, Notary Public (name and title of officer) personally, appeared who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

Witness my hand and official seal.

Signature

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section describes coordination of work under the Contract and coordination of the various parts of the Project. Contractor is responsible for all Work called for in the Contract and for coordinating its Work with the work of other contractors or other forces.
- B. Resolve differences and disputes concerning coordination, extent of Work, materials, etc. with workforce.
- C. Coordinate scheduling, submittals, etc. to assure efficient orderly sequencing of elements of the Work.
- D. Coordinate completion and clean-up of Work.

1.02 JOB SITE ADMINISTRATION

- A. County's Representative:
 - 1. Project Manager and Construction Manager will be the authorized representatives for County during Project duration.
 - 2. Provide County's representative(s) with complete access to all parts of the Work, keep informed on all job conditions, tests and scheduling. Provide notification of tests, samples, etc. 48 hours prior to event.
 - 3. Make all communications to County's official representative, Construction Manager. Construction Manager shall have the right to require that certain communications be made in writing.
- B. Contractor:
 - 1. Record keeping: Contractor's project records shall be maintained in an organized manner such that items may be easily reviewed by County at any time. Drawings and Specifications shall reflect all changes and be current.
 - 2. Superintendent: Maintain on Site, until Project is complete, a project superintendent and assistants as needed for the orderly execution of the Work. Superintendent shall be on Site at all times during the Work and shall be the representative of Contractor. All directions and decisions made by superintendent shall be binding as if given directly by Contractor. Contractor shall not replace superintendent without prior written consent of County unless superintendent terminates his employment. Replacement of superintendent must receive approval in writing from County. If superintendent is replaced, a replacement superintendent having experience and competence to perform the duties required and written documentation verifying qualifications shall be submitted to County. County has the right to require removal of superintendent, but that removal shall not relieve Contractor of any Contract obligations.

1.03 (NOT USED)

1.04 ELECTRICAL AND MECHANICAL COORDINATION

Contractor is responsible for the coordination of its Work with the work of other contractors or other forces. County assumes no responsibility for coordination issues.

1.05 COORDINATION OF DRAWINGS

Contractor is responsible to coordinate all drawings for the Work with drawings of other contractors or other forces for the Project. County assumes no responsibility for lack of coordination of work.

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.

- b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
- c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
- d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
- e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
- f. Indicate required installation sequences.
- g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.07 NOT USED

1.08 GENERAL COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these General Requirements to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance service and repair. Make adequate provisions to accommodate items scheduled for later installation.
- A. Coordination: Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.
 - 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for County and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as County's property.

PART 2 - PRODUCTS

Not applicable.

PART 3 – EXECUTION

Not applicable

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 31 19

PROJECT MEETINGS

PART 1 – GENERAL

1.01 REQUIREMENTS AND DESCRIPTION OF THE WORK

This section establishes administrative and procedural requirements for meetings required for the Contractor's management of the Contract.

1.02 PRE-BID, PRE-CONSTRUCTION CONFERENCE AND PROGRESS MEETINGS

- A. Construction Manager will schedule and administer a pre-bid meeting, a pre-construction meeting, periodic progress meetings and specially called meetings throughout the duration of the Work and after the completion of the Work as necessary to review the Project or completed Work.
- B. Representatives of the Contractor, Subcontractors, and suppliers attending the meetings, shall be qualified and authorized to act on behalf of the entity represented. All parties directly affecting or affected by the Work are required to attend.
- C. County's Construction Manager/Architect/Engineer will attend meetings to ascertain that Work is consistent with the Contract Documents and schedules.
- D. The Pre-Construction Meeting will be scheduled prior to commencement of Work. Construction Manager will arrange for a pre- construction conference to be held to discuss and clarify procedures to be followed during the progress of the Work. Location shall be a site as convenient as possible for all parties, designated by Construction Manager. The purpose of this meeting is to introduce the Contractor, his field superintendent, and the Subcontractors to County representatives, including the Project Manager, Construction Manager, Inspector and client representatives. Project procedures are reviewed, and any questions of the parties concerned are to be discussed.
- E. General Pre-Construction Conference, chaired by County shall be attended by:
 - 1. County's Representatives, including Project Manager and Construction Manager
 - 2. County's Consultants
 - 3. Contractor
 - 4. Contractor's Superintendent
 - 5. Architect
 - 6. Engineer
 - 7. Major Subcontractors
 - 8. CQA Engineer
 - 9. Others as appropriate

The Construction Manager will take and distribute meeting notes to the attendees. Attendees taking exception to anything in the meeting notes shall state their objections in writing, within **five (5) business days** following receipt of meeting notes (typical).

- F. Contractor and Construction Manager shall meet at the beginning of each day to discuss that day's events and future events. These meetings will be the forum wherein issues regarding utilities, water and other significant items will be reviewed and discussed to provide for a smooth transition.
- G. Project Manager or Construction Manager will schedule regular progress meetings to be held at the Site or at other designated sites. Meetings will be concerned with the execution of the Work, schedules, problems and any issue relevant to Work execution and completion. Construction Manager and Contractor's representatives and any person necessary for Work continuation or problem resolution shall attend. See **General Conditions subsection 1.11.D**.
- H. As part of the last progress meeting each month, County will schedule and hold a billing meeting, with Project Manager, Architect or Engineer and Construction Manager, for the purpose of agreeing on the percentage of the Work completed up to that date and establishing the amount to be requested in that application for payment. Percentages determined at such meetings are not to be construed as final and binding on County.
- I. Contractor shall prepare an itemized draft of the month's proposed billing for review with Construction Manager at the billing meeting. Break down line items as to costs of material and labor. A special line item is to indicate Contract Administration. This item shall include cost for work required to fulfill the administrative and documentation requirements of the Contract and Contract Documents.

- J. Following review of the proposed billing, revise as required, prepare application for payment, partial waivers of liens from Contractor and all Subcontractors for previous payment and forward it to Construction Manager, who will review all accompanying documents and forward them to Project Manager, who will authorize payment.
- K. Walk-Through Meeting(s) shall be attended by all individuals requested by County to do so. Construction Manager, the Fire Department representative and Contractor shall each prepare their own Punch List. Prior to the final "Walk-Through" by County, Contractor shall certify to County that the Work has been completed and the Work is ready for inspection. If the Work is not complete as stated, Contractor may be charged for the expenses incurred by County for review of the Work.
- L. GUARANTY/WARRANTIES, BONDS, AND SERVICE AND MAINTENANCE CONTRACTS REVIEW MEETING: **Eleven (11)** months following date of Final Acceptance, Contractor shall hold a meeting for the purpose of reviewing guaranties/warranties, bonds, and service and maintenance contracts for materials and equipment. An unconditional warranty of the Work and all systems will be provided by Contractor for a period of **one (1)** year. Contractor will take action as appropriate to implement repair or replacement of defective items prior to the expiration of any applicable warranties. Similar action will be taken prior to the expiration of any warranties during the **one (1)** year unconditional warranty period.

1.03 JOBSITE ADMINISTRATION

- A. The day-to-day administration of the work shall be conducted and inspected by County's Construction Manager and Inspector. Construction Manager shall determine whether any portion of the Work is accepted or rejected; provided, however, that any modification of the Contract, increased costs, or increased time may be approved only by Project Manager or the Board as appropriate. Project Manager's judgment as to the acceptance/rejection of any work shall be considered to be County's position on the matter.
- B. Any delays in the execution of the Work due to downtime while Contractor disputes Project Manager's judgment to any regulatory agency having jurisdiction shall not be a basis for a time extension, unless said agency accepts the Work in question without modification.
- C. Directives by Construction Manager, which, in the view of Contractor, substantially modify the Contract and therefore require a Change Order, shall be immediately brought to the attention of Project Manager in writing. Any such work accomplished without discussion and resolution with Project Manager shall be considered a gift to County.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

- A. Scheduling of the Work under this Contract shall be performed by Contractor in accordance with the requirements of this Section.
 - 1. Development of schedule and resource loading of the schedule, monthly payment requests and project status reporting requirements of the Contract.
 - 2. Submit schedules and reports as specified in the **General Conditions**.
- B. Related Sections:
 - 1. **Section 01 11 00** (Summary of Work)
 - 2. **Section 01 29 00** (Payment Procedures)
 - 3. **Section 01 33 00** (Submittal Procedures)

1.02 QUALIFICATIONS

Not Used.

1.03 GENERAL

- A. The Master Project Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests.
- B. Failure of Contractor's Baseline Schedule (defined below) to include any element of the Work, or any inaccuracy in the Baseline Schedule, will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. County's acceptance of the Master Project Schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon County, or act to relieve Contractor of its responsibility for review or means and methods of construction.
- C. Transmit each item under form approved by County.
- D. Submittals received from sources other than Contractor will be returned to Contractor without County's review.

1.04 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Contractor shall submit to Construction Manager within **ten (10) business days** following the execution of the Contract by County, a proposed mobilization and construction schedule for the Work (referred to as the "Baseline Schedule"). In constructing the Baseline Schedule, Contractor shall consider and plan for the milestones and sequencing indicated in the Preliminary Construction Schedule included in the bid documents.
- B. Indicate activities by name and specify required durations in days.
- C. Upon timely receipt of Baseline Schedules from Contractor, Construction Manager will prepare the Master Project Schedule.
- D. Failure to submit a Baseline Schedule will forfeit Contractor's right to a cooperative voice in constructing the Master Project Schedule.

1.05 MASTER PROJECT SCHEDULE

- A. Contractor's Baseline Schedules will be used by Construction Manager to develop the Master Project Schedule. Construction sequences or timing of the Baseline Schedules received from Contractor may be adjusted in the Master Project Schedule to facilitate sequencing and coordination of the Project.
- B. Contractor agrees to provide assistance to Construction Manager during the preparation of the Master Construction Schedule, in the areas of coordinating the Work with the work of all other Contractors.
- C. Contractor shall be required to acknowledge and accept the Master Project Schedule when finalized.
- D. Construction Manager will create the Master Project Schedule, provide all updates, and provide an as-built schedule.

1.06 ADJUSTMENTS TO MASTER PROJECT SCHEDULE

- A. Every Friday during the course of construction for the Work Contractor shall provide to Construction Manager updated schedule information in the form of one copy of a short-interval schedule. Activities listed in the short-interval schedule must conform to numbered activities listed in the Master Project Schedule.
- B. The short-interval schedule shall include the following:
 - 1. All planned activities for the 3-week period following the submission date;
 - 2. All material deliveries expected to arrive at the Site;
 - 3. All work of other contracts upon which completion of Contractor's Work depends;
 - 4. All requisite notifications of coordination requirements resulting from Contractor's Work;
 - 5. Certification that Contractor is on schedule, OR notification that Contractor will experience acceleration or delay of schedule, including reasons for same.
- C. Contractor will also submit to Construction Manager monthly a Progress Report, which is a schedule update comparing actual Work accomplished to the milestones in the Master Project Schedule. This Progress Report will be discussed at the monthly Schedule Update/Progress Payment meetings listed in **subsection 1.07** below.
- D. Construction Manager shall prepare monthly updates to the Master Project Schedule using short-interval schedules and monthly schedule updates from Contractor. The updates will become record documents and shall be the basis of notification of delay or acceleration and all resultant actions or remedies.
- E. All activities must include start dates, duration and completion dates. Indicate progress of each activity to date of the submittal. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- F. In addition to weekly short-interval schedules and monthly updates, Contractor must provide written narrative defining problem areas, anticipated delays, and impact on their progress and on the Master Project Schedule. Report corrective action taken, or proposed, and its effect (including the effect of changes on schedules of other Contractors).
- G. Construction Manager, County or Architect or Engineer's review of Contractor's Baseline Schedule, short-interval schedules and monthly updates is limited to verification of compliance with Contract start and end dates or Master Project Schedule milestones, and inclusion of Contract Time adjustments.
- H. To the extent that the Baseline Schedule, the Master Project Schedule or Contractor's short-interval schedules or monthly updates show anything not jointly agreed upon, it shall be deemed to have not been accepted by Construction Manager. Failure to include any element of Work required for the performance of the Contract shall not exempt Contractor from its obligation to complete all Work required within any applicable completion date or milestone date for each phase of the Project, notwithstanding creation of the Master Project Schedule and acceptance of same by all parties to the Contract.
- I. Construction Manager's acceptance of any revision to the Master Construction Schedule or to Contractor's short-interval schedule and all supporting data is contingent upon Contractor's compliance with all other paragraphs of this **Section 01 32 00**, all other requirements of the Contract Documents, and any other previous written agreements or requirements with or by Construction Manager. Notwithstanding anything proposed or set forth on any such short-interval schedule or monthly update, there shall be no change in the Contract Time or Contract Price except as set forth in **General Conditions Sections 1.14 and 1.15**.

1.07 MONTHLY SCHEDULE UPDATE/PROGRESS PAYMENT MEETINGS

- A. A meeting will be held on approximately the **twenty-fifth (25th)** of each month to review the monthly schedule update submittal and progress payment application. Date and time will be determined and notices sent by the Construction Manager to the Contractor.
 - 1. At this meeting, at a minimum, the following items will be reviewed: Percent complete of each activity; time impact evaluations for Change Orders and Time Extension Request; actual and anticipated activity sequence changes; actual and anticipated duration changes; and actual and anticipated Contractor delays.
 - 2. These meetings are considered a critical component of the overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, these meetings shall be attended by Contractor's Superintendent.
 - 3. Contractor shall plan on the meeting taking no less than four (4) hours.
 - 4. All schedule updates and revisions to be prepared by Contractor must be submitted before the Application for Payment is paid.
- B. Neither the updating, changing or revising of any report, curve, schedule, report or narrative submitted to County by Contractor under this Contract, nor County's review or acceptance of any same, shall have the effect of amending or

modifying, in any way, the Contract Time or of modifying or limiting, in any way, Contractor's obligations under the Contract.

1.08 SCHEDULE REVISIONS

- A. Updating the schedule to reflect actual progress shall not be considered revisions to the schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the schedule, Contractor shall provide County with a written narrative with a full description and the reasons for each Work activity revised.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by Construction Manager. Construction Manager may request further information and justification for schedule revisions and Contractor shall, within **three (3) Business days**, provide Construction Manager with a complete written narrative response to Construction Manager's request.
- D. If Contractor's revision is still not accepted by Construction Manager, and Contractor disagrees with Construction Manager's position, Contractor shall have **seven (7) days** from receipt of Construction Manager's letter rejecting the revision, to provide a written narrative providing full justification and explanation for the revision. If Contractor fails to respond in writing within **seven (7) days** of Construction Manager's written rejection of a schedule revision, Contractor shall waive its rights to subsequently dispute or file a Claim regarding Construction Manager's position.

1.09 RECOVERY SCHEDULE

- A. If Contractor's Work affecting the Master Project Schedule's critical path is **five (5) days** or more behind the currently updated Master Project Schedule, or if it becomes apparent that the Work will not be completed within the Contract Time, Contractor shall implement whatever steps are approved by Construction Manager to regain the lost time and put the Work in conformity with the Master Project Schedule. Among other options available to Construction Manager, Contractor must be prepared to:
 - 1. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities.
 - 2. If the above cannot be achieved then:
 - a. Contractor shall increase manpower in such quantities and crafts as will substantially eliminate, in the judgment of Construction Manager, the backlog of work; or increase the number of working hours, shifts per day, days per week or the amount of equipment or any combination of the foregoing sufficiently to substantially eliminate in the judgment of Construction Manager the backlog of work.
 - b. In addition, Construction Manager may require Contractor to submit a recovery schedule demonstrating its program and proposed plan to make up a lag in scheduled progress and to ensure completion of the Work within the Contract Time. If Construction Manager finds the proposed recovery schedule unacceptable, it may require Contractor to submit a new plan. If the actions taken by Contractor or the second plan proposed are unsatisfactory, Construction Manager may require Contractor to take any of the actions set forth in the previous paragraph at the sole expense of the Contractor to make up the lag in scheduled progress.
- B. If Contractor does not submit a recovery schedule that will make up the delay in completion of the Work, then Construction Manager may accelerate the work of other Contractors or use any other means or methods in order to make up any delay in the Master Project Schedule, and Contractor will be responsible for all costs associated with such acceleration or other means; or County may terminate Contractor for cause.
- C. The revisions shall not be incorporated into any schedule update until the revisions have been accepted by Construction Manager, or, if the revisions result in an extension of the Contract Time or increase in Contract Price, accepted by County.
- D. If Contractor's revisions are not accepted by Construction Manager or County, as appropriate, Construction Manager and Contractor shall follow the procedures in **subsections 1.08.C** and **1.08.D** above.

1.10 TIME IMPACTS EVALUATION FOR CHANGE ORDERS, AND OTHER DELAYS

- A. When Contractor is directed to proceed with changed work, Contractor shall prepare and submit, within **seven (7) business days** from the direction to proceed, or if there is no direction to proceed, from the commencement of the changed Work, a time impact evaluation (TIE) which includes both a written narrative and a schedule diagram depicting how the changed work affects other schedule activities. The schedule diagram shall show how Contractor proposes to incorporate the changed work in the schedule, and how it impacts the current Master Project Schedule. Contractor is also responsible for requesting time extensions based on the impact of the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable County to evaluate the impact of changed work to the scheduled critical path.

- B. Contractor shall be required to comply with the requirements of **subsection 1.08** and **1.09** above for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc. If acceleration is requested by County because of adverse weather conditions beyond the control of both parties, Contractor was not reasonably able to anticipate adverse weather conditions under the terms of this Contract, or because of strikes, the cost of acceleration is compensable pursuant to **Section 1.15 of the General Conditions**.
- C. Contractor shall be responsible for all costs associated with the preparation of Time Impact Evaluations, and the process of incorporating them into the current schedule update. Contractor shall provide Construction Manager with **four (4)** copies of each TIE.
- D. Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount allowed by County, and Contractor may submit a Claim for additional time claimed by contractor.

1.11 TIME EXTENSIONS

- A. Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the current schedule update. Notice of time impacts shall be given in accord with **Sections 1.12 and 1.15 of the General Conditions**.
- B. Where an event for which County is responsible impacts the projected Completion date, Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. Contractor shall also include a detailed cost breakdown of the labor, equipment and material Contractor would expend to mitigate County caused time impact. Contractor shall submit its mitigation plan to County within **seven (7) business days** from the date of discovery of said impact, or such additional time as Contractor and County may agree. Contractor is responsible for the cost to prepare the mitigation plan.
- C. Failure to request time, provide the TIE, or provide the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.
- D. No time will be granted under the Contract for cumulative effect of changes.
- E. County will not be obligated to consider any time extension request unless the requirements of the Contract Documents are complied with.
- F. Failure of Contractor to perform in accordance with the current schedule update shall not be excused simply by submittal of time extension requests.
- G. If Contractor does not submit a TIE within the required **seven (7) business days** for any issue, it is mutually agreed that Contractor does not require a time extension for said issue and any claim therefore is waived.

1.12 SCHEDULE REPORTS

NOT USED

1.13 PROJECT STATUS REPORTING

NOT USED

1.14 WEEKLY SCHEDULE REPORT

NOT USED

1.15 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to Construction Manager for each day, including weekends and holidays, when worked. Contractor shall develop the daily construction reports addressing Work, manpower and manhours by Contractor, Subcontractor, and Change Order work. Contractor shall obtain County's written approval of the daily construction report data base format prior to implementation. Include in the report:

- A. Project name and Bid number.
- B. Contractor's name and address.
- C. Weather, temperature and any unusual site conditions.
- D. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors of any tier. Descriptions shall be referenced to scheduled activities.

E. Manpower for its own Work force and for Subcontractors and Subconsultants of any tier.

F. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

PART 2 PRODUCTS

Not applicable to this section.

PART 3 EXECUTION

Not applicable to this section.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. This section describes general requirements for submittals for the Work:

1. Procedures
2. Schedule of Shop Drawing and Sample Submittals
3. Safety Plan
4. Progress Schedule
5. Product Data
6. Shop drawings
7. Samples
8. Quality Control Submittals
 - a. Design Data
 - b. Test Reports
 - c. Certificates
 - d. Manufacturers' Instructions
9. Machine Inventory Sheets
10. Operations and Maintenance Manuals
11. Computer Programs
12. Project Record Documents

B. Related Sections

1. **Section 01 11 00** (Summary of Work)
2. **Section 01 25 00** (Substitution Procedures)
3. **Section 01 26 00** (Contract Modification Procedures)
4. **Section 01 29 00** (Payment Procedures)
5. **Section 01 32 00** (Construction Progress Documentation)
6. **Section 01 77 00** (Closeout Procedures)
7. **Section 01 78 00** (Project Closeout)

1.02 PROCEDURES

A. Submit **six (6)** identical copies of Schedule of Shop Drawing and Sample Submittals, Safety Plans, Progress Schedule, Product Data, Samples, Quality Control Data, Machine Inventory Sheets, Application/Installation Instructions, Service or Operations and Maintenance Manuals, Computer Programs, and Project Record Documents required by the Contract Documents. **Two (2)** copies will be returned for your records and use. If you require more than two returned copies, you must submit additional copies equal to the number you require.

B. Package each Submittal individually and appropriately for transmittal and handling. Place a permanent label or title block on each submittal for identification, including the following information:

1. Space (approximately 6 by 8 inches) on label or beside title block to record Contractor's review and approval markings and action taken by Architect or Engineer and Construction Manager.
2. Name of firm or entity that prepared each submittal.
3. Project name.
4. Date.
5. Name and address of Architect or Engineer.
6. Name and address of Contractor.
7. Name and address of Subcontractor.

8. Name and address of supplier.
 9. Name of manufacturer.
 10. Number and title of appropriate Specification Section.
 11. Drawing number and detail references, as appropriate.
 12. Submittal number or other unique identifier, including revision identifier.
 - a. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g. 04 22 00 - 3.4).
 - b. Resubmittals shall include an alphabetic suffix after another decimal point (e.g. 04 22 00 - 3.4.A).
 13. Location(s) where product is to be installed, as appropriate.
 14. Other necessary identification.
- C. Where manufacturers' standard drawings or data sheets are used, they shall be marked clearly to show those portions of the data that are applicable to the Work.
- D. Submit Shop Drawings, Samples, Product Data and other submittals (collectively, "Submittals") to Construction Manager for submission to Architect or Engineer for review and action in accordance with the accepted Schedule of Submittals. If no such schedule is agreed upon, then all Submittals shall be submitted to Construction Manager within **twenty (20) business days** after receipt of Notice of Award or execution of the Contract, whichever is earlier.
- E. The data shown on all Submittals shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show Construction Manager the materials and equipment Contractor proposes to provide, and to enable Construction Manager to review the information for the limited purposes specified below. Samples shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as Construction Manager may require to enable Construction Manager to review the submittal.
- F. At the time of each submission, Contractor shall give Construction Manager and Architect or Engineer specific written notice of all variations, if any, that the Submittal may have from the requirements of the Contract Documents, and the reasons, therefore. This written notice shall be in a written communication separate from the Submittal. In addition, Contractor shall cause a specific notation (such as highlighting or encircling) to be made on each Submittal submitted to Construction Manager for review and approval of each such variation. If any variation would require a change in the Contract Time or Contract Price, then Contractor must submit a Change Order request.
- G. Contractor shall use for construction only final submittals stamped by Architect or Engineer as "No Exceptions Taken" or "Reviewed with Exceptions as Noted."
- H. Submittal coordination and approval is the responsibility of Contractor; this responsibility shall not be delegated in whole or in part to Subcontractors, Subconsultants or suppliers. Construction Manager will return Submittals, without review, that are received from sources other than Contractor or that do not bear Contractor's approval stamp or written signature. Before submitting each Submittal, Contractor shall review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents, and shall mark each submittal with Contractor's approval stamp or written signature certifying that Contractor has verified the following:
1. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;
 2. All materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work; and
 3. All information relative to Contractor's sole responsibilities of design and means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.
- I. Contractor's submission to the Construction Manager of a Submittal will constitute Contractor's representation that it has satisfied its obligations under the Contract Documents, and as set forth immediately above, with respect to Contractor's review and approval of that Submittal.
- J. Designation of work "by others", if shown in Submittals prepared by a Subcontractor, Subconsultant or supplier, shall mean that work will be responsibility of Contractor rather than the Subcontractor, Subconsultant or supplier who has prepared submittals.
- K. After review by Construction Manager and Architect or Engineer of each of Contractor's Submittals, **two (2)** copies of the submittal will be returned to Contractor marked "No Exceptions Taken," "Reviewed with Exceptions as Noted," "Revise and Resubmit," "Submit Specified Item" or "Rejected."
1. Final Unrestricted Release: Where the submittal is marked "No Exceptions Taken," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final Acceptance will depend on that compliance.

2. Final-but-Restricted Release: Where the submittal is marked “Reviewed with Exceptions as Noted,” the Work covered by the submittal may proceed provided it complies with both Architect or Engineer’s notations and corrections on the submittal and the Contract Documents. Final Acceptance will depend on that compliance.
 3. Returned for Resubmittal: Where the submittal is marked “Revise and Resubmit,” do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to Architect or Engineer’s notations and corrections.
 4. Rejected: Where the submittal is marked “Rejected,” do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 5. Incomplete: Where the submittal is marked “Submit Specified Item,” do not proceed with the Work covered by the submittal. Prepare additional information requested, or required by the Contract Documents, that indicates compliance with requirements.
- L. It is considered reasonable that Contractor shall make a complete and acceptable Submittal at least by its second submission for each Submittal. County reserves the right to deduct monies from payments due Contractor to cover additional costs of review by Construction Manager, Architect and Engineers beyond the second submission. Illegible Submittals will be rejected and returned to Contractor for resubmission. Resubmittals shall be in the same form and number of copies as initial Submittals, with the following additional information:
1. Date and content of previous submittal.
 2. Date and content of revision in label or title block. Clearly indicate extent of revision. Resubmit Submittals until they are marked “No Exceptions Taken” or “Reviewed with Exceptions as Noted.”
- M. Favorable review will not constitute acceptance by County of any responsibility for the accuracy, coordination and completeness of the Submittals. Accuracy, coordination, and completeness of Submittals shall be sole responsibility of Contractor, including responsibility to backcheck comments, corrections, and modifications from County’s review before proceeding with the Work that is the subject of the Submittals. Submittals may be prepared by Contractor, Subcontractors, Subconsultants, or suppliers, but Contractor shall ascertain that Submittals meet all requirements of the Contract Documents, while conforming to structural space and access conditions at the point of installation. Architect’s and Construction Manager’s review will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the requirements of the Contract Documents and be compatible with the design concept of the completed Work as a functioning whole as required by the Contract Documents. Favorable review of a 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 an assumption of risk or liability by County, or any officer or employee thereof, and Contractor shall have no claim under Contract on account of failure or partial failure or inefficiency or insufficiency of any plan or method of work or material and equipment so reviewed. Favorable review shall be considered to mean merely that County has no objection to Contractor using, upon his own full responsibility, the plan or method of work proposed, or furnishing the materials and equipment proposed.
- N. Construction Manager’s review will not extend to the means, methods, techniques, sequences or procedures of design or 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. Construction Manager may, with the consent of County, decline to review Submittals, in which event the Submittals will be returned to Contractor. There is no obligation running to Contractor on the part of County, Architect or Engineer, Project Manager, Construction Manager, or anyone acting for any of them to act upon Contractor’s Submittals, and action upon them does not give rise to liability of any type to the Contractor.
- O. Submit a complete initial Submittal for those items where required by individual Specification sections. The complete submittal shall contain sufficient data to demonstrate that items comply with the Contract Documents, shall meet minimum requirements for submissions cited in the specifications, shall include motor data and seismic anchorage certifications, where required, and shall include other necessary revisions required for equipment. If Contractor submits an incomplete initial Submittal, the Submittal may be returned to Contractor without review.
- P. It shall be Contractor’s responsibility to copy, conform and distribute reviewed Submittals in sufficient numbers for Contractor’s files, Subcontractors, Subconsultants, manufacturers, suppliers, fabricators, installers, vendors, authorities having jurisdiction, and others as necessary for performance of the Work.
- Q. After Architect or Engineer’s and Construction Manager’s review of a Submittal, revise and resubmit as required. Identify changes made since previous Submittal.
1. Begin no fabrication or work which requires Submittals until return of Submittals not requiring resubmittal.
 2. Normally, Submittals and Resubmittals will be processed and returned to Contractor within **fifteen (15) business days** of receipt.

1.03 CONTRACTOR'S USE OF ARCHITECT OR ENGINEER'S CAD FILES. At Contractor's written request, copies of Architect or Engineer's CAD files will be provided to Contractor for Contractor's use in connection with the Work, subject to the following conditions:

- A. Only major site plans or sections will be provided.
- B. Title blocks will be removed from the file.
- C. Notes and dimensions may be removed from the file.
- D. Compliance of the requests for consultant files is at the discretion of the consultant.

1.04 SAFETY PLAN

- A. Submit **two (2)** copies of a Safety Plan specific to the Work to Construction Manager prior to the start of Work.
- B. One (1) copy of the accepted Safety Plan will be returned to Contractor.
- C. No on-site work shall be started until Safety Plan has been reviewed and accepted by Construction Manager. Acceptance of the Safety Plan shall not affect Contractor's responsibility for maintaining a safe working place and instituting safety programs in connection with the Work. Neither County nor Construction Manager assumes any responsibility for Contractor's safety related obligations. Contractor shall have sole responsibility for safety on and off the Site.

1.05 PROGRESS SCHEDULE

NOT USED

1.06 PRODUCT DATA

- A. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation. and reference standards.
- B. Tabulate products by specification section number.
- C. Supplemental Data:
 - 1. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Work.
 - 2. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
- D. Provide copies for Project Record Documents described in **Section 01 78 00 (Project Closeout)** below.

1.07 SHOP DRAWINGS

- A. Minimum Sheet Size: 8-1/2 inches by 11 inches. All others: Multiples of 8-1/2 inches by 11 inches, 11 inches by 17 inches, 22 inches by 34 inches, and 30 inches by 48 inches maximum.
- B. For 8-1/2 inch by 11 inch, 11 inch by 17 inch sheets, and 22 inch by 34 inch sheets, submit the number of copies that Contractor requires, plus **four (4)** copies that will be retained by the Construction Manager.
- C. For 22 inch by 34 inch through 30 inch by 48 inch sheets, submit 1 reproducible transparency and four (4) prints. After review, reproduce and distribute.
- D. The original sheet or reproducible transparency will be marked with Architect or Engineer's and Construction Manager's review comments and returned to Contractor.

- E. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the Work.
- F. Include manufacturers' installation instructions when required by Specification section.
- G. Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - 1. Dimensions.
 - 2. Identification of products.
 - 3. Fabrication and installation drawings.
 - 4. Roughing-in and setting diagrams.
 - 5. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - 6. Shop work manufacturing instructions.
 - 7. Templates and patterns.
 - 8. Schedules.
 - 9. Notation of coordination requirements.
 - 10. Notation of dimensions established by field measurement.
 - 11. Relationship to adjoining construction clearly indicated.
 - 12. Seal and signature of professional engineer if specified.
 - 13. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

1.08 SAMPLES

- A. Submit full range of manufacturers' standard colors, textures, and patterns for the Architect or Engineer's and Construction Manager's selection.
- B. Submit samples to illustrate functional and aesthetic characteristics of each product, with integral parts and attachment devices. Coordinate Submittal of different categories for interfacing work. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
- C. Include identification on each sample, giving full information.
- D. Sizes: Unless otherwise specified, provide the following:
 - 1. Paint Chips: Manufacturers' standard
 - 2. Flat or Sheet Products: Minimum 6 inches square, maximum 12 inches square
 - 3. Linear Products: Minimum 6 inches, maximum 12 inches long
 - 4. Bulk Products: Minimum 1 pint, maximum 1 gallon
- E. Full size samples may be used in the Work upon approval. Maintain sets of approved Samples at the Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
- F. Mock-ups:
 - 1. Erect field samples and mock-ups at the Project Site in accordance with the requirements of Specification sections.
 - 2. Modify or make additional field samples and mock-ups as required to provide appearance and finishes approved by Construction Manager and Architect or Engineer.
 - 3. Approved field samples and mock-ups may be used in the Work upon approval.
 - 4. Additional time may be required for the Architect or Engineer to visit the Project Site to review the field samples. Date and time of site visit and duration of review period will be mutually agreed and coordinated among the Architect, Engineer, and Contractor through Construction Manager.

1.09 QUALITY CONTROL SUBMITTALS

- A. Design Data: **Six (6)** copies. **Two (2)** copies will be marked with Architect or Engineer's and Construction Manager's review comments and returned to Contractor.
 - 1. Indicate that the design data conforms to or exceeds the requirements of the Contract Documents.
 - 2. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 3. Identify conflicts with test reports, certificates, manufacturer's instructions, or specific aspect(s) of the Contract Documents.

- B. Test Reports: **Six (6)** copies. **Two (2)** copies will be marked with Architect or Engineer's and Construction Manager's review comments and returned to Contractor.
 - 1. Indicate that the material or product conforms to or exceeds specified requirements.
 - 2. Reports may be from recent or previous tests on material or product but must be acceptable to Construction Manager. Comply with requirements of each individual Specification.
- C. Certificates: **Six (6)** copies. **Two (2)** copies will be marked with Architect or Engineer's and Construction Manager's review comments and returned to Contractor.
 - 1. Indicate that the material or product conforms to or exceeds specified requirements.
 - 2. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 3. Certificates may be recent or from previous test results on material or product but must be acceptable to Construction Manager and Architect or Engineer.
- D. Manufacturers' Instructions: **Six (6)** copies. **Two (2)** copies will be marked with Architect or Engineer's and Construction Manager's review comments and returned to Contractor.
 - 1. Include manufacturers' printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing.
 - 2. Identify conflicts between manufacturers' instructions and Contract Documents.

1.10 INFORMATIONAL SUBMITTALS

- A. Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit **six (6)** copies of each submittal, unless otherwise indicated.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in **Section 01 45 00** (Quality Control Requirements).
- B. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR). Include names of firms and personnel certified.
- C. Installer Certificates: Installer shall certify that installation has been made in compliance with manufacturer's installation requirements and the Contract Documents.
- D. Manufacturer Certificates: When required, Contractor shall provide written statements on manufacturer's letterhead certifying that the installation and equipment or materials comply with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- E. Product Certificates: Contractor shall submit written certification that product complies with requirements in the Contract Documents.
- F. Material Certificates: Contractor shall submit written certification that material complies with requirements in the Contract Documents.
- G. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- H. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- I. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- J. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

- L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- M. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.
- N. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- O. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Provide all of manufacturers' application/installation instructions to Construction Manager at least **ten (10) business days** prior to first material application or installation of the item. Include name of product and name, address, and telephone number of manufacturers.
- P. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

1.11 OPERATIONS AND MAINTENANCE MANUALS

- A. Prior to making application for Final Payment, submit **three (3)** copies of manufacturers' operations and maintenance manuals. If necessary, all copies will be marked with County's review comments and returned to Contractor for correction until satisfactory information is provided. County will retain satisfactorily corrected manuals for its own use.
- B. Operations and maintenance manuals shall include the following as appropriate:
 - 1. Operating instructions
 - 2. Preventive maintenance instructions
 - 3. Cleaning instructions
 - 4. Safety precautions
 - 5. Trouble shooting procedures
 - 6. Theory of operation to discrete component level
 - 7. Schematic diagrams, flow diagrams, wiring diagrams, logic diagrams, etc. to discrete component level
 - 8. Parts lists showing all discrete components with part number, current prices and availability
 - 9. List of replaceable supplies; paper, ink, ribbon, etc. with part numbers, current prices and availability
 - 10. Recommended levels of spare parts and supplies to keep on hand
 - 11. Manufacturers' service and maintenance technical manuals
 - 12. Names, addresses and telephone numbers of service and repair firms for the equipment
- C. Manuals shall be the same as are used by manufacturers' authorized technicians to completely service and repair the equipment.
- D. Contractor or appropriate Subcontractors shall instruct County's personnel in operation and maintenance of all motorized or electrical equipment prior to Final Acceptance of the Work.

1.12 COMPUTER PROGRAMS

When any equipment requires operation by computer programs, submit a copy of the program on appropriate diskette plus all user manuals and guides for operating the programs and making changes in the programs for upgrading and expanding the databases. Programs must be Windows XP compatible, or in a form otherwise acceptable to the County. Provide required licenses to County at no additional cost.

1.13 PROJECT RECORD DOCUMENTS

Submit one copy of each of the Project Record Documents listed in **Section 01 78 00** (Project Closeout).

1.14 DELAY OF SUBMITTALS

Delay of Submittals by Contractor is considered avoidable delay. Damages incurred because of late Submittals will be assessed to Contractor.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 35 00

SPECIAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes: Environmental procedures. Intention of this Section is to ensure those involved with the Project act positively to protecting the environment, both on-site and off-site, during demolition and during construction operations.
- B. General provisions of the Contract, including **General Conditions and Division 01 General Requirements** apply to work of this Section.

1.02 SPECIAL ENVIRONMENTAL DEFINITIONS

- A. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemical, and inorganic chemical wastes.
- B. Class III Landfill: Landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- C. Construction and Demolition Waste: Solid wastes such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations. Contractor shall meet Cal Green Mandatory Measures, which require 50% diversion per County Ordinance 1703. Contractor to validate local ordinance and compliance with Cal Green Section 5.408.1.1, 5.408.1.2, 5.408.1.3, 5408.1.4.
 - 1. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass, crockery, tin cans, metal and lumber scrap.
 - 2. Debris: Combustible and noncombustible wastes such as leaves and tree trimmings that result from construction or maintenance and repair work.
- D. Environmental Pollution and Damage: Presence of chemical, physical, or biological elements or agents that could:
 - 1. Adversely affect human health or welfare.
 - 2. Unfavorably alter ecological balances important to human life, affect other species of importance to humanity.
 - 3. Degrade the utility of the environment for aesthetic, cultural or historical Purposes.
- E. Inert Fill: Permitted facility that accepts inert waste such as asphalt and concrete exclusively.

Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by local, state, or national regulatory agencies, and which does not contain significant quantities of decomposable solid waste.
- F. Sanitary Wastes
 - 1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food.
 - 2. Sewage: Domestic sanitary sewage
- G. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

1.03 GENERAL ENVIRONMENTAL CONCERNS

- A. Project requires maximum environmentally conscious work feasible within limits specified, available materials, equipment, and products.
 - 1. Contract Documents shall be prepared to maximize environmental consciousness, recycling, and reuse of recyclable and reusable materials.
 - 2. Inform County of Amador's Representative where special environmental requirements could detrimentally impact critical path of construction schedule. Upon request, provide separate itemization of costs related to special environmental procedures and to materials and equipment intended to be environmentally safe.
 - 3. Participate in promoting efforts of the County to create an energy-efficient and environmentally sensitive facility.
 - 4. Use recycled, toxic-free, and environmentally sensitive materials, equipment, products, and procedures to maximum extent possible.
 - 5. Prevent environmental pollution and damage and affect optimum control of solid wastes.

- B. Handling: Recycle materials shall be free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
- C. Arrange for collection by or delivery to appropriate recycling center or transfer station that accepts construction and demolition waste for purpose of recycling.
- D. Participate in Re-Use Programs: Participate in re-use programs to extent available in Project area.
- E. Environmental Controls: Comply with federal, state, and local regulations pertaining to water, air, solid waste, chemical waste, sanitary waste, sediment, and noise pollution.
- F. Protection of Natural Resources: Preserve the natural resources within Project boundaries and outside limits of permanent work performed under Contract in existing condition or restore to an equivalent or improved condition upon completion of Work. Refer to the requirements in Mitigation Measures that was made a condition of the CEQA approval for this Project.
 - 1. Work Activities: Confine demolition and construction activities to areas defined by limits indicated on the Drawings.
 - 2. Water Resources: Comply with applicable regulations concerning direct and indirect discharge of pollutants to underground and natural waters.
 - 3. Oily Substances: Prevent oily and other hazardous substances from entering ground, drainage areas, and local bodies of water in quantities which could produce measurable ecological impact on area.

PART2 - PRODUCTS

2.01 RECYCLED MATERIALS

- A. Construction Safety Fences: Where possible use recycled construction safety fences.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

This section includes regulatory requirements applicable to the Contract.

1.02 REFERENCES TO REGULATORY REQUIREMENTS

- A. Codes, laws, ordinances, rules and regulations referred to shall have full force and effect as though printed in full in the Contract Documents.
- B. Conform to referenced codes, laws, ordinances, rules and regulations which are in effect on the date the Contract is entered. Where various codes conflict, the more stringent shall be followed.

1.03 CODES

Codes that apply to the Contract include, but are not limited to, the following:

- A. Cal. Administrative Code (Part 1, Title 24, C.C.R.)
- B. Cal. Solid Waste Code (Title 27, C.C.R.)
- C. Cal. Electrical Code (Part 3, Title 24, C.C.R.)
- D. Cal. Mechanical Code (Part 4, Title 24, C.C.R.)

1.04 LAWS, ORDINANCES, RULES AND REGULATIONS

Perform the Work so that the Work, upon completion, shall comply with all applicable laws, ordinances, rules and regulations, including, but not limited to, the following:

- A. Federal
 - 1. Americans with Disabilities Act
 - 2. 29 CFR, Section 19 10. 100 1, Asbestos
 - 3. 40 CFR, Subpart M, National Emission Standards for Asbestos
 - 4. Executive Order 11246
- B. State of California
 - 1. California Code of Regulations, Titles 8, 19, 21, 24
 - 2. Not Used (California Education Code)
 - 3. California Public Contract Code
 - 4. California Health and Safety Code
 - 5. California Government Code
 - 6. California Labor Code
 - 7. California Civil Code
 - 8. California Code of Civil Procedure
 - 9. CPUC General Order 95, Rules for Overhead Electric Line Construction
 - 10. CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems
- C. State of California Agencies:
 - 1. Board of State and Community Corrections
 - 2. State and Consumer Services Agency
 - 3. Department of General Services
 - 4. Office of the State Fire Marshal
 - 5. Regional Water Quality Control Board
- D. Local Agencies:

1. Amador Air District
 2. Amador County
 3. City of Ione
- E. County of Amador: Resolutions of Board of Supervisors and County Policies:
- 1.
 2. County's Recycled Product Purchase Preference Program
 3. County's Recycled Paper Policy
 4. County's Alcohol and Drug Policy

1.05 REQUIRED PROVISIONS ON CONTRACT CLAIM RESOLUTION

- A. Public Contract Code section 20104 et seq. specifies required provisions on resolving contract claims less than \$375,000, which are set forth below, and constitute a part of this Contract.
1. For the purposes of this section, "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 County. In order to qualify as a CLAIM, the written demand must state that it is a claim submitted under **Section 1.12** of the **General Conditions** and be submitted in compliance with all requirements of **Section 1.12** of the **General Conditions**. Separate claims that 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. With respect to any claims for compensable delay caused by or attributed to County, the daily rate shall be limited to the "Daily Rate Amount" set forth in the Bid Form.
 2. A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a claim under the Contract, but is a claim under the California False Claims Act, California Government Code Sections 12650 et seq. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a claim under the Contract by submitting a separate claim in compliance with Contract claim submission requirements.
 3. **CAUTION:** This section does not apply to tort claims and nothing in this section 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.

B. PROCEDURE

1. The CLAIM must be in writing, submitted in compliance with all requirements of **Section 1.12** of the **General Conditions**, including, but not limited to, the time prescribed thereby and including the documents necessary to substantiate the CLAIM, pursuant to **subsection 1.12.D** of the **General Conditions**. CLAIMS must be filed on or before the day of final payment. Nothing in this section is intended to extend the time limit or supersede notice requirements for the filing of claims as set forth in **Section 1.12** of the **General Conditions** or elsewhere in the Contract Documents or by applicable law.
2. For CLAIMS of fifty thousand dollars (\$50,000) or less
 - a. County shall respond in writing within **forty-five (45) business days** of receipt of the CLAIM; or
 - b. County may request in writing within **thirty (30) business days** of receipt of the CLAIM, any additional documentation supporting the CLAIM or relating to any defenses or claims County may have against Claimant.
 - i. If additional information is thereafter required, it shall be requested and provided in accordance with this section, upon mutual agreement of County and Claimant.
 - ii. County's written response to the CLAIM, as further documented, shall be submitted to Claimant within **fifteen (15) business days** after receipt of further documentation or within a period of time no greater than that taken by Claimant in producing the additional information, whichever is greater.
3. For CLAIMS over fifty thousand dollars (\$50,000) and less than or equal to \$375,000:
 - a. County shall respond in writing within **sixty (60) business days** of receipt of the CLAIM, or
 - b. County may request in writing within **thirty (30) business days** of receipt of the CLAIM, any additional documentation supporting the CLAIM or relating to any defenses or claims County may have against Claimant.
 - i. If additional information is thereafter required, it shall be requested and provided in accordance with this section, upon mutual agreement of County and Claimant;

- ii. County's written response to the CLAIM, as further documented, shall be submitted to Claimant within **thirty (30) business days** after receipt of further documentation or within a period of time no greater than that taken by Claimant in producing the additional information, whichever is greater.
4. Meet and Confer
 - a. If Claimant disputes County's written response, or County fails to respond within the time prescribed above, Claimant shall notify County, in writing, either within **ten (10) business days** of receipt of County's response or within **ten (10) business days** of County's failure to timely respond and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon such demand County will schedule a meet and confer conference within **thirty (30) business days** of the demand for settlement of the dispute.
 - b. 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 above and in **General Conditions paragraph 1.12.B.1**, 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.

1.06 COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

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 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 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.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 42 00

REFERENCES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes some, but not all, reference standards, abbreviations, symbols and definitions used in the Contract Documents.
- B. Full titles and edition dates are given in this section for standards cited in other sections of the Contract Documents.
- C. Material and workmanship specified by reference to number, symbol, or title of specific standard such as state standard, commercial standard, federal specifications, technical society, or trade association standard, or other similar standard shall comply with requirements of standards except when more rigid requirements are specified or required by applicable codes or the Contract Documents.
- D. Standards referred to, except as modified herein, shall have full force and effect as though printed in the Contract Documents. Standards are not furnished to Contractor, since manufacturers and trades involved are assumed to be familiar with their requirements.
- E. Basic Contract definitions are also included in **General Conditions Section 1.00**.

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

- A. 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 contracting, except as may be otherwise specifically stated in the Contract Documents.
- B. 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 Construction Manager, and Contractor shall not proceed with the Work affected thereby until consent to do so is given by the Construction Manager.
- C. Except as otherwise specifically stated in the Contract Documents or as provided by Change Order or supplemental instruction, 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:
 - 1 The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - 2. The provisions of any laws or regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of law or regulation). No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of County, Contractor, Construction Manager, Architect or Engineer, 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 County, Construction Manager, Architect or Engineer, or any of their consultants, agents 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.

1.03 STANDARDS

- A. The standards of the following organizations apply to the Work, unless otherwise provided in the Contract Documents. Contractor shall determine what specific standards apply to the Work and shall comply with them, unless otherwise provided in the Contract Documents.
 - 1. ACI (American Concrete Institute)
 - 2. AISC (American Institute of Steel Construction)
 - 3. ANSI (American National Standards Institute, formerly American Standards Association)
 - 4. ASTM (American Society for Testing and Materials)
 - 5. IAPMO (International Association of Plumbing and Mechanical Officials)
 - 6. ICBO (International Conference of Building Officials)

7. NEMA (National Electric Manufacturer's Association)
8. NFPA (National Fire Protection Association)
9. UL (Underwriters' Laboratories, Inc.)

1.04 ABBREVIATIONS. Following abbreviations may be used in Contract Documents:

A. Industry Organizations

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AFPA	American Forest & Paper Association (See AF&PA)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International (The American Society of Mechanical Engineers International)
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)

AWCI	AWCI International (Association of the Wall and Ceiling Industries International)
AWCMA	American Window Covering Manufacturers Association (See WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
CCC	Carpet Cushion Council
CCFSS	Center for Cold-Formed Steel Structures
CDA	Copper Development Association Inc.
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	CSA International (Formerly: IAS - International Approval Services)
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DHI	Door and Hardware Institute
EIA	Electronic Industries Alliance
EIMA	EIFS Industry Members Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
FCI	Fluid Controls Institute
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FM	Factory Mutual System (See FMG)
FMG	FM Global (Formerly: FM - Factory Mutual System)

FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	Geosynthetic Research Institute (See GSI)
GS	Green Seal
GSI	Geosynthetic Institute
HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (See NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
IAS	International Approval Services (See CSA)
IBF	International Badminton Federation
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance (The)
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association
MFMA	Metal Framing Manufacturers Association
MH	Material Handling Industry of America (See MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)

NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association (The)
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	National Oak Flooring Manufacturers Association
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc.
NTRMA	National Tile Roofing Manufacturers Association (See RTI)
NWWDA	National Wood Window and Door Association (See WDMA)
OPL	Omega Point Laboratories, Inc.
PCI	Precast/Prestressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RTI	Roof Tile Institute (Formerly: NTRMA - National Tile Roofing Manufacturers Association)
SAE	SAE International
SDI	Steel Deck Institute
SDI	Steel Door Institute

SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPI/SPFD	Society of the Plastics Industry, Inc. (The) Spray Polyurethane Foam Division (See SPFA)
SPRI	SPRI (Single Ply Roofing Institute)
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society
TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
UL	Underwriters Laboratories Inc.
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (See WCSC)
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly WIC - Woodwork Institute of California)
WIC	Woodwork Institute of California (See WI)
WMMPA	Wood Molding & Millwork Producers Association
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

B. Other Abbreviations

AAP	Affirmative Action Program
AInA	American Insurance Association (successor to NBFU)
ASI	Architects Supplemental Instructions
BIL	Basic Insulation Level
Cal/OSHA	California Occupational Safety and Health Administration
CBC	California Building Code
CCD	Construction Change Directive
CCR	California Code of Regulations
CEC	California Electrical Code
CFR	Code of Federal Regulations
CO	Change Order
CPC	California Plumbing Code
CPUC	California Public Utilities Commission
CPM	Critical Path Method
CRA	California Redwood Association
CS	Commercial Standard ((U.S. Dept. of Commerce)
DSA	Division of the State Architect
FLS	Fire & Life Safety
FS	Federal Specification
HVAC	Heating, Ventilating and Air Conditioning
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
I.D.	Identification
IOR	Inspector of Record
JATC	Joint Apprenticeship Training Committee
JV	Joint Venture
Kw	Kilowatt
LBE	Local Business Enterprise
NBFU	National Board of Fire Underwriters (See AInA)
NEC	National Electric Code of NFPA
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PM	Preventive Maintenance
PR	Proposal Request
RFI	Request for Information
RFS	Request for Substitution
SFM	State of California, Office of State Fire Marshal
SPR	Simplified Practice Recommendation (U.S. Dept. of Commerce)
SWPPP	Storm Water Pollution Prevention Plan
Title 19	California Code of Regulations – Public Safety
Title 24	California Code of Regulations – Building Code
UBC	Uniform Building Code
UFC	Uniform Fire Code
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
WBE	Woman-Owned Business Enterprise

C. Additional abbreviations, used only on Drawings, are listed thereon.

1.05 SYMBOLS

Symbols, used only on Drawings, are shown thereon.

1.06 DEFINITIONS

A. 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:

ADDENDA: Written change or revision to the Contract Documents issued to the prospective bidders prior to the time of receiving bids.

AGREEMENT: Same as CONTRACT.

APPROVED EQUAL: Approved in writing by County as being of equivalent quality, utility and appearance.

ARCHITECT: The person holding a valid license to practice architecture, or its firm, which has been designated within the Contract Documents as the Architect to provide architectural services on the Project. When "Architect" is referred to within the Contract Documents and no architect has been designated, then the matter shall be referred to County.

BY OTHERS: Work that is outside scope of Work to be performed by Contractor under this Contract, which will be performed by County, other Contractors, or other means.

BY COUNTY: Work that will be performed by County or its agents at County's expense.

CHANGE ORDER: A written instrument prepared by County and signed by County and Contractor, stating their agreement upon all of the following: (1) a change in the Work; (2) the amount of the adjustment in the Contract Price, if any; and (3) the amount of the adjustment in the Contract Time, if any.

CITY: Ione, California

CODE: The requirements of County of Amador Building Code, Planning Code, and Fire Code; Title 24 of the California Administrative Code; and the Americans with Disabilities Act, all as in effect as of the date of application for the building permit.

CONCEALED: Work not exposed to view in the finished Work, including within or behind various construction elements.

CONSTRUCTION MANAGER: An individual or firm designated by County to oversee the Work on behalf of County. If there is no Construction Manager designated in the Contract Documents, then all duties and obligations and all rights of Construction Manager in the Contract Documents shall be performed by Project Manager.

CONSTRUCTION QUALITY CONTROL ENGINEER: An individual or firm designated by County to confirm the Work is performed in accordance with the Construction Quality Assurance Plan on behalf of County. If there is no Construction Manager designated in the Contract Documents, then all duties and obligations and all rights of Construction Manager in the Contract Documents shall be performed by Project Manager.

CONTRACT: Contract is the basic contract document that binds the parties to the Work. Contract defines relationships and obligations between County and Contractor and by reference incorporates **Invitation to Bid 24-01 and all Addendums, Construction Contract, General Conditions, Division 01 General Requirements, Drawings (ITB 24-01 Bid Set Plans), ~~Structural Calculations~~, Volumes 1 & 2 Specifications Divisions 03 through 33, Construction Quality Assurance Plan, As-Built Drawings and all Modifications** subsequent to execution of Contract.

CONTRACT CONDITIONS: Contract Conditions define basic rights, responsibilities and relationships of Contractor and County and consists of two parts: **General Conditions and Division 01 General Requirements**, if any.

- a. General Conditions are general clauses.
- b. Division 01 General Requirements modify or supplement General Conditions to meet specific requirements for this Contract.

CONTRACT DOCUMENTS: Contract Documents shall consist of the documents identified as the Contract Documents in the Construction Contract, plus all changes, addenda and modifications thereto.

CONTRACT DRAWINGS: The "Contract Drawings" (sometimes referred to as the "construction drawings," "technical drawings", "drawings", or "plans") are the plans and working drawings that show the location, character, dimensions and details of the Work, and all supplemental drawings issued by County or Architect. Once approved, all such drawings are incorporated into and become a part of the Contract Documents.

CONTRACT MODIFICATION: An authorized change to the Contract Documents that may (but not necessarily) include a change in Contract Price and/or Contract Time. A Contract Modification is a written amendment to the Contract signed by Contractor and County, or a Change Order, or a written directive for a minor change in the Work issued by County.

CONTRACT PRICE: The sum stated in the Contract and, including authorized adjustments, the total amount payable by County to Contractor for performance of the Work and the requirements of the Contract Documents. Also referred to as the Contract Sum.

CONTRACT TIME: The number or numbers of days or the dates stated in the Contract (i) to achieve completion of the Work or designated milestones in the Master Project Schedule, and/or (ii) to complete the Work so that it is ready for final payment and is accepted, as adjusted by any Change Order issued pursuant to the Contract Documents.

COUNTY: Amador County, California.

COUNTY-FURNISHED, CONTRACTOR-INSTALLED: Items furnished by County at its cost for installation by Contractor at its cost under this Contract.

COUNTY REPRESENTATIVE(S): The person or persons assigned by County to be County's representatives or, if so designated, agent(s) at the site.

DATE OF COMPLETION: The date on which Completion of the Project or designated portion thereof occurs.

DAY: One calendar day, unless the word "day" is specifically modified to the contrary.

DEFECTIVE (OR "DEFICIENT"): An adjective which, when modifying the word "Work", refers to Work that is unsatisfactory or unsuited for the use intended, faulty, or deficient in its design, construction or installation, 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 County). County is the judge of whether Work is defective.

ENGINEER: The person holding a valid license to practice engineering, or its firm, which has been designated within the Contract Documents as the Engineer to provide engineering services on the Project. When "Engineer" is referred to within the Contract Documents and no engineer has been designated, then the matter shall be referred to County.

EQUAL: Equal in opinion of the Construction Manager. The burden of proof of equality is the responsibility of the Contractor.

EXPOSED: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.

FINAL ACCEPTANCE: Date that County accepts the Work as satisfactorily completed in accordance with the Contract Documents. Unless otherwise determined by County, Final Acceptance is the point at which guarantees, and warranties begin. Requirements include, but are not limited to:

- a. Final Completion of the Project has been achieved.
- b. All Systems having been tested for a period of not less than **thirty (30) business days** of operation, with all testing periods covering at least the same **thirty (30) business day** period and accepted as having met the requirements of the Contract Documents.
- c. All required instructions and training sessions having been given by Contractor.
- d. All as-built or record drawings and operations and maintenance manuals and Machine Inventory Sheets having been submitted by Contractor, reviewed by Construction Manager and accepted by County.
- e. All punch list work, as directed by County, having been completed by Contractor.
- f. Generally, all work on the Project, except Contractor maintenance after Final Acceptance, having been completed to the satisfaction of County.

FINAL COMPLETION or FINALLY COMPLETE: When the following have been achieved for the entire Project: (1) the Project is complete and in compliance in all respects with all Contract Documents and ready for final inspection; (2) the written certification required by **Section 01 77 00** (Closeout Procedures) **subsection 1.02.A** has been submitted by Contractor; (3) all Submittals required by **Section 01 77 00** (Closeout Procedures) have been made; and (4) the requirements for Final Acceptance have been met, including all punch list items.

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.

FURNISH: To deliver FOB the Site.

INDICATED: Shown or noted on the Drawings.

INSPECTOR: The person engaged by Construction Manager to inspect the workmanship, materials, or manner of construction to determine if such construction complies with the Contract Documents and applicable codes.

INSTALL: To properly set in place and permanently connect all required services.

LATENT: Not apparent by reasonable inspection, including but not limited to, the inspections and research required under the Contract Documents.

MATERIAL OR MATERIALS: These words 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.

MILESTONE: A principal event specified in the Contract Documents or Master Project Schedule relating to an intermediate completion date or time prior to Completion of all Work on the Project.

MODIFICATION: Same as Contract Modification.

NOT IN CONTRACT: Work that is outside the scope of work to be performed by Contractor under this Contract.

NOTICE OF INTENT TO AWARD CONTRACT: A written notice given by County to Contractor advising that its proposal, as modified, and other qualifying information is acceptable to County, requiring Contractor to fulfill the requirements of **General Conditions Section 1.03**.

NOTICE TO PROCEED: A written notice given by County to Contractor fixing- the date on which the Contract Time will commence to run and on which Contractor shall start to perform Contractor's obligations under the Contract Documents.

OFF SITE: Outside the geographical location of the Project.

OWNER: County of Amador.

PROGRESS REPORT: A periodic report submitted by Contractor to County with progress payment requests comparing the actual Work accomplished to the Master Project Schedule. See **Section 01 32 00** (Construction Progress Documentation), and the **General Conditions**.

PROJECT: The overall undertaking by the County, of which the Work that is the subject of the Contract Documents may be a part.

PROJECT MANAGER: County's authorized representative concerning matters relative to this Contract. Project Manager may authorize representatives to act in carrying out Project Manager's duties, including a Construction Manager and design consultants. As County's representative, Project Manager is the County employee designated by County to represent County with respect to the Project.

PROJECT MANUAL(S): The Project Manual is the volume usually assembled for the Work, which may include, without limitation, the **Invitation to Bid 24-01 and all Addendums, Construction Contract, General Conditions, Division 01 General Requirements, Drawings (ITB 24-01 Bid Set Plans), ~~Structural Calculations, Volumes 1 & 2~~ Construction Quality Assurance Plan, Technical Specifications Divisions 03 through 33 and As-Built Drawings**.

PROPOSAL: Response to the Request for Proposals, and any and all addenda issued thereto.

PROVIDE: Furnish and install.

REQUEST FOR INFORMATION ("RFI"): A document prepared by Contractor, requesting information regarding the Work or Contract Documents. The RFI system is also a means for County to submit Contract Document clarifications or supplements to Contractor.

REQUIREMENTS: As used throughout the Request for Proposals and the Contract, the term "requirements" includes qualitative, quantitative, and functional criteria and criteria referenced in terms of minimum limits, e.g., a minimum clear ceiling height of 11'-0", and criteria referenced in terms of maximum limits, e.g., a maximum sight line angle of "x" degrees.

RFI-REPLY: A document consisting of supplementary details, instructions or information issued by the Construction Manager that clarifies or supplements Contract Documents, and with which Contractor shall comply. RFI-Replies do not constitute changes in Contract Price or Contract Time except as otherwise agreed in writing by County. RFI-Replies will be issued through the RFI administrative system.

SAMPLES: Physical examples of materials, equipment, or workmanship that is representative of some portion of the Work and which establish the standards by which such portion of the Work shall be performed and will be judged.

SERVICING AGREEMENT: Not Used.

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.

SHOWN: As depicted on Drawings.

SITE: The particular geographical location and physical bounds of the Work performed pursuant to the Contract.

SPECIFICATIONS: The written portion of the Contract Documents prepared for construction and finally approved by County, consisting of requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

SPECIFIED: As written in the Specifications.

SUBCONTRACTOR AND SUBCONSULTANT: A person, firm, or corporation that is required by law to be and who is licensed to and will perform work, labor, or render services to Contractor in or about the construction of the Work, or who, under subcontract to Contractor, fabricates and installs a portion of the Work. The terms "Subcontractor" and

“Subconsultant” are referred to throughout the Contract Documents as if singular in number and neuter in gender and means a Subcontractor, Subconsultant or an authorized representative of the Subcontractor or Subconsultant.

COMPLETION or COMPLETE: When both of the following have been achieved for the entire Project: (1) all governmental approvals and permits, including, but not limited to, a Certificate of Occupancy, have been obtained that are necessary to allow the facility to be utilized for the purpose intended, and (2) in the judgment of County, the Project has been completed to the extent necessary to produce a fully functional, usable, and operational facility for such purposes and all punch list items have been completed and approved by County.

SUPPLEMENTAL INSTRUCTION: A written work change directive to Contractor from the Construction Manager ordering alterations or modifications that do not result in change in Contract Price or Contract Time, and do not substantially change the Drawings or Specifications.

CONTRACTOR: The person, firm or corporation holding a valid California Contractor's license, that has contracted with County to perform the Work described in the Contract Documents. The term Contractor shall be construed to mean all of its officers, employees, Subcontractors, suppliers or other persons engaged by it to perform the Work.

CONTRACTOR'S EMPLOYEES: Persons engaged in execution of the Work under the Contract as direct employees of Contractor, as Subcontractors, Subconsultants or as employees of Subcontractors or Subconsultants.

UNDERGROUND FACILITIES: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

WORK: The work more specifically defined in the Contract Documents, which is a portion of the entire work of construction for the Project. In every instance, the quality level or quantity shown, designated, required or specified in the Contract Documents is intended to be the minimum for the Work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with that minimum (within specified tolerances) or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted, or as appropriate for context of the requirements. (Refer instances of uncertainty to Construction Manager for decision before proceeding.)

- B. 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 County, Architect or Engineer or Construction Manager is intended. Words “sufficient”, “necessary”, “proper”, and the like shall mean sufficient, necessary or proper in the judgment of County, Architect or Engineer or Construction Manager. 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 County, Architect or Engineer or Construction Manager.
- C. Wherever the word “may” is used, the action to which it refers is discretionary. Wherever the words “shall” or “will” are used, the action to which they refer is mandatory.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 45 00

QUALITY CONTROL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. All drawings, Contract Conditions, Special Conditions, General Conditions (if any), and other General Requirement Sections, of the Contract Documents apply to this Section.
- B. Related Sections
 - 1. **Section 01 11 00** (Summary of Work)
 - 2. **Section 01 41 00** (Regulatory Requirements)

1.02 SUMMARY

- A. This Section specifies (i) administrative and procedural requirements for quality assurance and quality control, and (ii) administrative and procedural requirements for Contractor to provide and maintain an effective Quality Control Program including, but not limited to: administration, management, supervision, reports, record-keeping, use of independent testing agencies and labs or other services related to testing and inspection as required in the Contract Documents to be performed by Contractor.
- B. Quality Control is the sole responsibility of Contractor.
- C. Quality Control services do not include Quality Assurance, Contract enforcement or code inspection activities performed by County.
- D. Quality Control services, including without limitation testing and inspecting services, are required to verify compliance with requirements specified or indicated and do not relieve Contractor of responsibility for compliance with the Contract Documents. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
- E. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
- F. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, County, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
- G. Specific Quality Control requirements for individual construction, fabrication and procurement activities shall be addressed in Contractor's Quality Control Program.
- H. The Quality Control services described herein are not intended to limit the Contractor's Quality Control activities that may be necessary to achieve full compliance with the Contract Documents. Requirements for Contractor to provide quality-assurance and -control services required by Architect or Engineer, County, or authorities having jurisdiction are not limited by provisions of this Section.
- I. See **Divisions 2 through 33** Sections for specific test and inspection requirements.

1.03 DEFINITIONS

- A. **Quality-Assurance Services:** Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. **Quality-Control Services:** Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Engineer.
- C. **Mockups:** Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. **Laboratory Mockups:** Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. **Preconstruction Testing:** Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-Subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to the Work; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.04 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Construction Manager for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Construction Manager for a decision before proceeding.

1.05 SUBMITTALS

- A. Qualification Data: For testing agencies specified in **subsection 1.06** (Quality Assurance) to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
 - a. 1. Date of issue. 2. Project title.
 - b. 3. Name, address, and telephone number of testing agency.
 - c. 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 15. 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- C. Permits, Licenses, and Certificates: For County's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.06 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Section establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to the Work, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for the Work and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for the Work and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for the Work in material, design, and extent.
- F. Specialists: Certain sections of the Contract Documents require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - a. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - b. 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for the Work.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Construction Manager.
 - c. 2. Notify Construction Manager **seven (7) business days** in advance of dates and times when mockups will be constructed.
 - d. 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - e. 4. Obtain Architect or Engineer's approval of mockups before starting work, fabrication, or construction.
 - f. 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - g. 6. Demolish and remove mockups when directed, unless otherwise indicated.
- J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in **Divisions 2 through 33**.
- K. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- L. Pre-construction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Provide test specimens representative of proposed products and construction.
 - 2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - 3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - 4. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - 5. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

1.07 QUALITY CONTROL

- A. County Responsibilities: Where quality-control services are indicated as County's responsibility, County will engage a qualified testing agency to perform these services.
1. Construction Manager will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Price will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to County are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are Contractor's responsibility, engage a qualified testing agency to perform these quality-control services. NOTE: Contractor shall not employ same entity engaged by County, unless agreed to in writing by County.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing to Construction Manager.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for replacement construction to replace Work that failed to comply with the Contract Documents.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - h. 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 - i. 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - j. 6. Security and protection for samples and for testing and inspecting equipment at the Site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to County, Architect, Commissioning Authority, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.08 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within **thirty (30) days** of Notice to Proceed. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used

to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Submit resume for Project Quality-Control Manager.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 3. County-performed tests and inspections indicated in the Contract Documents including tests and inspections indicated to be performed by Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract Documents and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as non-conforming or defective. Indicate corrective actions taken to bring non-conforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.09 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, telephone number, and email address of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Documents.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and re-inspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.

- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 4. Statement whether conditions, products, and installation will affect warranty.
 - 5. Other required items indicated in individual Specification Sections.

1.10 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: County will engage a qualified testing agency and special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of County as indicated in the Schedule of Special Inspections in this Section, and as follows:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

1.11 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

PART 2 PRODUCTS

2.01 GENERAL

- A. Contractor shall provide full and complete documentation of all Quality Control activities including a Contractor Quality Control Program and Plan, detailing quality control procedures and related documentation.
- B. Within **thirty (30) days** of County's issuing a Notice to Proceed, Contractor shall submit to County a complete written summary of Contractor's Quality Control Program that complies with the requirements of this section.
- C. Contractor's Quality Control Program shall outline the specific timeframes or periods during construction during which the Architect or Engineer or his employees or consultants will be on Site to review the work and the progress of construction activities for conformity with the drawings and specifications. Include disciplines to be on Site during each of these reviews and inspections.
- D. The Quality Control Program shall include specific steps to be taken by Contractor to control construction quality and ensure conformance with the drawings and specifications for the Work. Include specific steps to be taken to correct deficiencies in the quality of all Work under the Contract.

2.02 DESCRIPTION OF PROGRAM

- A. Contractor shall establish a Quality Control Program (Program) which shall establish an organization and methodology to perform quality control with regard to Contractor's Work, including that of its Subcontractors. The Program shall ensure conformance to applicable performance criteria in the Contract Documents with respect to the materials, codes, workmanship, standards, storage, installation, construction, finishes, functional performance, and identification. The Program shall be established for all Work performed under the Contract. The Program shall specifically include surveillance and tests required in the technical provisions of the Contract Documents to be provided by Contractor.
- B. Contractor's Quality Control Program shall include the following activities for all definable features of work:
 - 1. Preparatory Inspection Meeting: Contractor shall attend a preparatory meeting to review testing procedures at least one week prior to beginning work on any element of Work that has been identified in the Contract Documents requiring testing and inspection by the Contractor, if any, testing and inspection by County or which has code-required inspections.
 - 2. In-Progress Review of the Work: Contractor shall perform in-progress review of the Work as it progresses on a particular feature of the Work, which shall include:
 - a. Examination of the quality of workmanship.
 - b. A review of the means by which the Work will be reviewed for compliance.

- c. Review of the Work for defective or damaged materials, omissions and dimensional requirements.
 - d. Review of timeliness and scheduling requirements for all tests, retests and eventual approvals.
 - e. Contractor Deficiency Reports and punch lists as appropriate to the level of completion of the Work.
3. Pre-Final Review of the Work: Contractor shall determine portions of the Work believed to be 100% complete as to which, in Contractor's judgment, all deficiencies and punch list items have been corrected. Project Manager, Construction Manager, Architect or Engineer and Contractor will then review the Work and record any remaining elements of the Work that may require further correction or completion.
 4. Final Review of the Work: Contractor shall review the Work with representatives of County to confirm that the work is 100% complete according to the Contract Documents.
 5. Cooperation with Code Required Inspection by County: Contractor shall cooperate with County's inspections, tests and other activities required by codes and regulations and as specified.

PART 3 EXECUTION

3.01 RECORD KEEPING

- A. Contractor shall maintain current Quality Control records, on forms approved by the Construction Manager, of all quality control activities performed. The records shall include factual evidence that the required quality control activities have been performed, including but not limited to, the following information: Specification reference, date and type of quality control activities involved; results of the quality control reviews; the nature of defect, causes for rejection, proposed remedial action; corrective action(s) taken and similar information related to any follow up quality control activities.
- B. Contractor shall maintain and submit the following Quality Control records and reports:
 1. Deficiency Report: Contractor shall submit a weekly deficiency report to the Construction Manager identifying all failed or unacceptable quality control reviews performed during the week including identification by specification section and schedule activity of the quality control activity, location and nature of defects, causes for rejection and remedial actions taken or proposed. The deficiency report shall also identify corrective actions taken or proposed for any open items on prior deficiency reports including a scheduled date for resolution of each item.
 2. Immediate Notification: Contractor shall provide immediate notification to the Construction Manager whenever a failed or unacceptable quality control review occurs. Follow up this immediate notification with the required written reports.

3.02 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and Construction Manager's reference during normal working hours.
 1. Submit log at Project closeout as part of Project Record Documents.

3.03 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.04 SPECIAL INSPECTION SCHEDULE

- A. Structural steel construction (see 2019 CBC Section 1705.2.1)

- B. Concrete construction (see 2019 CBC Section 1705.3)
- C. Masonry construction – Level B (see 2019 CBC Section 1705.4)
- D. Soils (see 2019 CBC Section 1705.6)
- E. Post installed anchors (refer to Structural Drawings)
- F. Structural wood (see 2019 CBC Section 1705.11.2)
- G. Concrete Reinforcement (2019 CBC Section 1705.12.1)

3.05 ORGANIZATION

NOT USED

3.06 QUALITY CONTROL PLAN

NOT USED

3.07 QUALITY ASSURANCE BY COUNTY

NOT USED

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

This section describes the temporary facilities required for the Project site. The Project site shall be maintained by Contractor as set forth in this section.

1.02 TEMPORARY FACILITIES

A. Contractor, if required by the Contract Documents or in the performance of its Work, shall provide, at its expense, the following temporary facilities and services:

1. Scaffolding, staging, hoisting equipment, barricades, walkways, false-work, templates, bucks, trench plates, trench shoring and/or jacking, necessary to perform and complete the Work, including erection and dismantling, and engineering as required. All such structures shall be adequate for the intended use and capable of safely accepting all loads that may be imposed upon them. Contractor shall obtain permits for, install and maintain any such structures in safe condition, and install and maintain all structures in accordance with all applicable State and local codes and regulations.
2. Contractor's jobsite office and/or tool storage containers, subject to the express permission and approval of Construction Manager. Materials, tools, accessories, etc., shall be stored only where directed by County. Storage area shall be kept neat and clean. Security of stored items shall be Contractor's responsibility. When flammable materials are stored on site, extra precautions, including clear identification and storage in OSHA-approved containers, shall be the responsibility of Contractor. It shall be Contractor's responsibility to comply with Construction Manager's specific directions and to coordinate Contractor's Work with the work of other Contractors performing work on the site.
3. Chemical Toilet Facilities for the use of Construction Manager, Engineer, IOR, Contractor, Subcontractors and employees.
4. Drinking water for Construction Manager, Engineer, IOR and Contractor's forces.
5. Safety devices, equipment, notices, manuals, plans.
6. Traffic Control personnel, equipment, devices, notices as required to control and protect vehicle and pedestrian traffic.
7. If the Project borders a residential neighborhood, Contractor shall perform the Work during regular business hours and comply with any/all municipality noise regulations. Contractor must make provisions for the safety of residents and the general public adjacent to the site while working in proximity to these areas or while working off-site.
8. Contractor shall provide and maintain temporary heat from an approved source whenever in the course of the Work it may become necessary for curing and drying of materials, or to warm spaces as may be required for the installation of materials or finishes. Contractor shall also provide temporary lighting and power distribution necessary for the Work. Dust control measures, cleaning of roadways and other surfaces, fire safety devices and measures shall be provided by Contractor as required by its Work.
9. Equipment and services required to perform all lifting, lowering, conveying and hoisting.
10. Contractor's equipment rentals and small tools purchase and repair.
11. On-going, daily housekeeping and cleanup of Contractor's work-area debris to be disposed of in debris boxes or removed from the site. No Contractor will be permitted to leave debris, trash, leavings, dirt, garbage, rubbish, material containers, etc., on the site. No unsafe and unworkmanlike conditions will be permitted.
12. Hardhats and other personal safety equipment.
13. Debris boxes for all debris generated on site.
14. Temporary construction water hook-up and distribution, gas, and telephone (including charges and installation fees) for Contractor's use.
15. Contractor shall promptly remove all such temporary facilities when they are no longer needed for the work or for completion of the Project, mutually agreed upon by Contractor and County.

1.03 SECURITY ENCLOSURE AND LOCKUP

- A. Install substantial temporary enclosure and/or site fencing with screening around partially completed areas of construction and site.
- B. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1.04 SIGNS

No signs may be displayed on or about County's property (except those required by law) without County's specific approval; the size, content, and location to be as specified by County.

1.05 USE OF ROADWAYS AND WALKWAYS

Contractor shall not block or interfere with use of any existing roadway, walkway or other facility for vehicular or pedestrian traffic, from any party entitled to use it. Wherever and whenever such interference becomes necessary for the proper and convenient performance of the Work, and no satisfactory detour, including temporary bridge if necessary, or other proper facility for traffic to pass around or over the interference continues, all without extra payment unless otherwise expressly stipulated in the Contract Documents.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as County's property.

3.02 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.03 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, County, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
- B. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install Wi-Fi cell phone access equipment.
 1. At each telephone, post a list of important telephone numbers including:
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Construction Manager's home office.
 - g. Engineers' offices.
 - h. County's office.
 - i. Principal subcontractors' field and home offices.

3.04 SUPPORT FACILITIES INSTALLATION

A. Gene

1. Maintain support facilities until Architect schedules Completion review. Remove before Completion. Personnel remaining after Completion will be permitted to use permanent facilities, under conditions acceptable to County.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations.

1. Provide dust-control treatment that is non-polluting and non-tracking. Re-apply treatment as required to minimize dust.

C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 31 20 00 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proof rolling, compacting, and testing.

D. Parking: Provide temporary parking for construction personnel. E.Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
3. Maintain and touch up signs so they are legible at all times.

G. Waste Disposal Facilities: Comply with requirements specified in Section 01 74 00 "Cleaning and Waste Management."

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property County to access property for that purpose.
- B. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- C. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- D. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.06 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. At Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in **Section 01 77 00** (Closeout Procedures).

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 SCOPE

- A. Preservation and restoration of natural resources within the project work areas.
- B. Disposal of wastes produced during construction.

1.02 RELATED SECTIONS

1.03 SUBMITTALS

Submit an erosion control plan covering control of graded and paved areas

- A. Prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement using best management practices (BMPs), that includes the incorporation of source control, site design, and treatment control BMPs to address anticipated and potential pollutants.

1.04 REGULATORY REQUIREMENTS

- A. Comply with Federal, State, and local regulations pertaining to the environment including, but not limited to water, air and noise pollution.
- B. Comply with City of Jackson ordinances applicable to the Work.
- C. Comply with all the requirements included in the Mitigation Measures for Amador County Detention Facility Expansion Project as part of CEQA compliance.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

3.01 TREE PROTECTION

- A. Do not remove, cut, deface, injure, or destroy any trees that are to remain.
- B. Protect existing trees that are to remain and that may damage by construction operations.

3.02 TEMPORARY CONSTRUCTION

Remove traces of temporary construction facilities such as access roads, work areas, laydown areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other signs of construction.

3.03 OILY WASTES

Prevent oily or other hazardous substances from entering the ground, drainage areas, or bay.

3.04 EROSION AND SEDIMENT CONTROL MEASURES

- A. Burning off ground cover is not permitted.
- B. Conduct earthwork to minimize duration of exposure of unprotected soils.
- C. Control runoff to limit erosion.
- D. Trap sediment in water discharged from grading operations.

3.05 CONTROL AND DISPOSAL OF WASTE MATERIALS

- A. Collect and place waste materials in containers which are regularly emptied.
- B. Remove and dispose of debris and rubbish from the project site.

3.06 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

- A. Store any hazardous waste generated during construction in approved containers identified as to type and date.
- B. Remove from project site and dispose of hazardous waste in accordance with 40 CFR 263 and 40 CFR 264.

3.07 DUST CONTROL

Keep down at all times. Sprinkle with potable water or treat with dust suppressants.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section establishes requirements for the transportation, handling, storage and protection of materials and equipment.

1.02 GENERAL REQUIREMENTS

- A. Material and equipment incorporated in the work shall be:
 - 1. New, unless otherwise specified.
 - 2. In a condition acceptable to County.
 - 3. Suitable for the use intended.
- B. All materials and equipment not conforming to specified requirements will be considered defective. Items that have been accepted or approved at one time and place, but which subsequently fail to conform to the requirements of the Specifications will be considered defective. All such materials, whether in place or not, will be rejected. Remove such materials and equipment immediately from the site of the Work and replace with conforming materials and equipment.
- C. Prior to ordering materials or starting work, verify all measurements at the site. No extra compensation will be allowed for inaccurate measurements or insufficient materials.
- D. Except as specifically noted otherwise, follow the installation and/or application directions provided by manufacturer for all materials and equipment.
- E. For each part of the Work, furnish all materials and equipment of the same type by the same manufacturer.
- F. No material or equipment shall be used for any purpose other than that for which it is designed or specified.
- G. No material shall contain asbestos or lead.

1.03 TRANSPORTATION AND HANDLING

- A. Deliver manufactured products in the manufacturer's original, unbroken containers or packaging, with identifying labels intact and legible. Transport and handle products in accordance with manufacturer's instructions.
- B. Immediately on delivery, inspect shipments to assure compliance with the requirements of the Contract Documents and reviewed submittals to verify that products are properly protected and undamaged.
- C. Handle products in a manner to avoid soiling and damaging the products and their packaging.
- D. Contractor shall be responsible for delivery to job site and signing bills of lading.
- E. Products shall be delivered in the same condition as manufactured, without defect. Promptly remove damaged and defective products from the site and replace at no increase in Contract Price.
- F. Do not ship items to County. County will not take delivery of, sign for, receive and/or hold materials delivered to the Contractor.

1.04 STORAGE

- A. Store manufactured products in accordance with the manufacturers' printed instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate-controlled enclosures.
- B. Periodically inspect stored product to assure that products are maintained under specified conditions and free from damage and deterioration.

1.05 PRODUCT OPTIONS

Should the product or material be an "approved equal manufacturer," submit complete documentation showing the same aspects specified for the "specified manufacturer," and provide details showing conditions which may be required to change in order to accommodate the "approved equal manufacturer." Such changes shall be initiated and paid for by the Contractor.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 WORKMANSHIP

Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the Work.

3.02 MANUFACTURER'S INSTRUCTIONS

Generally, follow the manufacturer's instructions to install products and materials. If these Specifications differ materially from the manufacturer's instructions, notify Construction Manager immediately. Do not proceed with Work until conflict is resolved.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The requirements of the **General Conditions** and **Division 01 General Requirements** apply to the work of this Section.

1.02 REQUIREMENTS AND DESCRIPTION OF WORK

- A. This Section describes the requirements for performing cleaning and disposal operations during the progress of the Work and at the completion of the Work.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with all applicable regulatory requirements during the conduct of cleaning and disposal operations.

PART2 - PRODUCTS

2.01 MATERIALS

- A. Use cleaning materials that will not create hazards to health or property or cause to damage to products or Work.
B. Use cleaning materials and methods recommended by the manufacturers of the products to be cleaned.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION

- A. Perform cleaning operations as required during construction to prevent accumulation of dust, dirt, soil and debris.
B. Clean-up During Construction: Contractor shall keep the Project and Site free from all surplus material, waste material, dirt and rubbish caused by his employees and work. At the completion of the Work, Contractor shall remove all such surplus material, waste material, dirt and rubbish, as well as leave all Work clean and spotless.
C. Contractor shall perform clean-up daily and shall transport his rubbish to location designated by Construction Manager, who will arrange for its removal. Contractor shall secure all tools, materials, equipment and any other items used in the progress of the Work at the end of each shift or day.
D. During the progress of the Work, promptly remove any material that spills onto exposed finished surfaces. Do not allow accumulation of scrap and debris resulting from construction activities. Upon completion of the Work, remove all excess materials from the Site and leave clean. Leave the Project and Site in a condition acceptable to County.
E. All clean-up work will be done to the satisfaction of County at the sole expense of Contractor.
F. Schedule operations to prevent dust and other contaminants resulting from cleaning operations from adhering to newly finished surfaces.

3.02 FINAL CLEANING

- A. Perform final cleaning. Remove dust, dirt, grease, stains, labels, spills and splatters and other foreign materials. The Work, including exterior of building if a part of Contractor's Work, shall be in clean condition upon completion as a condition of Final Acceptance.
B. Immediately prior to inspection for Final Completion, remove waste materials and rubbish from Project and Site. Remove protective coatings, barriers and other protective devices, temporary work and surplus materials.
C. Clean the Site: Leave Site in neat and orderly condition, ready for occupancy and use by County. Dust mop, wash and otherwise clean all exposed and semi-exposed surfaces to remove stains, dust and dirt so as to leave Work in a new, clean condition ready for occupancy.
D. Maintain Work in clean condition until County determines Work to be Complete.
E. Upon Final Completion of Work remove tools, construction equipment machinery and surplus materials from premises.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the requirements for Contract closeout, including provisions for Project Record Documents, operating and maintenance data, instruction of County's personnel, guarantees/warranties and bonds, service and maintenance contracts, preparation for final inspection, restoration of damaged work, remedial work, and extra materials.
- B. Submit all required documentation both electronically (PDF or WORD formats) and hard copy prior to final Application for Payment. Submission of Project Record Documents shall be accompanied with a transmittal letter in triplicate.

1.02 PREPARATION FOR FINAL INSPECTION

- A. When the entire Project is nearing Completion, Construction Manager will notify Contractor. Contractor shall then submit to Construction Manager written certification that Contractor has reviewed the Contract Documents, the Work has been inspected and is complete in accordance with the Contract Documents, and the Work is ready for inspection by Construction Manager, Architect or Engineer and County. As a result of the inspection Contractor will provide Construction Manager with written "punch-list" of items that need to be corrected or completed before final acceptance of the Project. For each item, list the amount necessary to complete the item and the reason why the item has not been able to be completed. Contractor shall proceed immediately to complete and correct items on the list. Failure to include an item on the list does not alter the responsibility of Contractor to complete all work in accordance with the Contract Documents. No one is authorized to amend the Contract Documents by use of the punch list; it is provided solely to assist Contractor to determine what items must be corrected before Final Acceptance will be recommended by Construction Manager and Architect or Engineer. County reserves the right to require compliance with the Contract Documents, notwithstanding the issuance of a punch list or the completion by Contractor of all items on the punch list.
- B. Upon receipt of the Contractor's punch list, if only minor corrective measures are required, County at its sole discretion may accept the Work as Complete based upon the Contractor's written assurances that corrections (listed on various lists) will be complete within a stated and agreed to period of time. In the event that the Work still does not comply with the Contract Documents, County, Architect or Engineer and Construction Manager reserve the right to issue such further punch lists as may be required, or to deduct from the final payment the cost of correcting any Work not completed in accordance with the Contract Documents, but accepted by County, without the issuance of further punch lists. If the Work is incomplete and additional inspections are required to determine completion, County may deduct from the final retention payment all expenses due to its consultants or for its staff for additional inspections.
- C. When the Project is complete in every respect, Contractor shall notify County's representative in writing that the Work is ready for final inspection on a particular date.
 - 1. Contractor shall accompany the Construction Manager, Architect or Engineer and Project Manager during final inspection together with responsible representatives of any Subcontractor(s) County may request to be present.
 - 2. If the Project is not acceptable or complete within the stated time limits, or if any or extensive corrective measures are still required, County will not accept the Work or the Project.
- E. Assemble all Project Record Documents, such as guaranties/warranties, service and maintenance contracts, operating and maintenance instruction, and other items as specified, and transmit to Construction Manager.
- F. Perform final cleaning. See **Section 01 74 00** (Cleaning and Waste Management).
- G. Remove temporary tapes, wrapping, coatings, paper labels, and similar items. Dust, mop, wash, or wipe exposed and semi-exposed surfaces as necessary to leave Work in a new, clean condition.
- H. Deliver tools, spare parts, extra materials, and similar items to location designated by County. Label with manufacturer's name and model number where applicable.
- I. Complete startup testing of systems with County being present. Instruct County personnel in operation, adjustment and maintenance of products, equipment, and systems.

1.03 PROJECT RECORD DOCUMENTS. See **Section 01 78 39**.

- A. Provide clean, clear copies of project documents and submittals.
- B. Recording:

1. Record information carefully and neatly with color ink in color code designated, and in the manner approved in advance by County.
 2. Label each document "PROJECT RECORD" in large, neat, printed letters.
- C. Specifications, Addenda and Change Orders
1. Mark each Specification Section to record:
 - a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually incorporated in the work.
 - b. Changes made by Change Order and other modifications.
 - c. Provide Specification Books for record purposes in large 3-ring D binders.
 - d. Changes and notes shall be recorded in Specifications in blank areas or on separate sheet inserted in the binder. All such information changes and notes shall be recorded in color which contrasts with original document.
 - e. In each section, in appropriate location record the manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - f. The record Specifications book shall be complete and shall include all documents and forms required of the Contract Documents.
 - g. Addenda and Change Orders shall be incorporated into the front of the Specifications book in reverse chronological order. Use appropriate page dividers to identify and separate from addenda and Specifications.
- D. Record Drawings with clearly noted changes meeting County CAD standards submitted on disk and reproducible drawing.
1. Contractor to provide electronic copy of redline / field as-built drawings prior to submission of application for final payment.
- E. Signed copies of all guarantees, warranties and bonds.
1. Manufactured equipment and supplies shall carry a manufacturer's warranty/guarantee for the length of time specified by the manufacturer, but not less than **one (1)** year. The County shall be entitled to manufacturer's standard warranty/guarantee that exceeds **one (1)** year, including limited warranties/guarantees.
 2. Provide signed Contractor's **one (1)** year unconditional warranty on Contractor's letterhead. Manufacturers' warranties notwithstanding, warrant the entire work against defects in materials and workmanship for **one (1)** year from the date of acceptance.
 3. Warranties between Contractor and manufacturers, and Contractor and suppliers, shall not affect guarantees/warranties between Contractor and the County.
 4. Compile specified guarantees/warranties and bonds.
- F. Product Data: Furnish manufacturers' product data, technical data sheets, specifications, installation instructions, and maintenance instructions for products incorporated in the Work. All product data pertaining to an item shall be assembled together in three (3) complete sets of manuals containing the manufacturer's instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract and any additional data specifically required under the various sections of the specifications. The following information must be in front of each notebook submitted.
1. Submission date.
 2. Project title and number.
 3. Contractor's name, address and phone number.
 4. Title and number of each record document and index.
 5. Certify by endorsement that each submitted document is complete and accurate.
 6. Signature of Contractor or authorized representative.
 7. Bind copies of all printed material.
 8. Identification on, or readable through, the front cover with the Project name and address and the general subject matter contained in the manual.
 9. Neatly typewritten index near the front of the manual.
 10. Extraneous Data: Where contents of manuals include manufacturers' catalog pages, clearly indicate the items included in this installation and delete, or otherwise clearly indicate, data that is not applicable to this installation.

1.04 REVIEW MEETING

- A. **Eleven (11)** months following date of acceptance, County will schedule and convene a meeting for the purpose of review of, and action upon, guaranties/warranties, bonds, and service and maintenance contracts.

1.05 RESTORATION OF DAMAGED WORK OR REMEDIAL WORK

- A. Restore or replace, as specified or determined by County, material and finishes damaged from construction activities at no additional expense to County.
- B. Restoration shall be equal to the original work, and finishes shall match the appearance of existing adjacent work.
- C. Remedial work necessary due to faulty workmanship or materials shall be performed by Contractor at no additional expense to County.
- D. Work shall be coordinated with County and performed at such time and in such manner to cause minimal interruption and inconvenience to County's operations.

1.06 EXTRA MATERIALS

- A. Where required in the individual Specifications Sections, furnish extra materials in the quantities and manner specified.
- B. Delivery and certification of such extra materials shall be a prerequisite to Completion.

1.07 DATE OF FINAL COMPLETION

Date of Final Completion shall be the date designated by County in a written notice to Contractor on which County accepts the Project as complete. The Project may be accepted in part or in its entirety.

1.08 COMMENCEMENT DATE FOR GUARANTEE PERIOD

The commencement date for all guarantees shall be the date of Final Acceptance of the Project by County, or such earlier date as may be specified in a Contract Modification in the event the Work is placed into continuous service by County for the use intended.

1.09 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Completion.
- C. Certified List of Incomplete Items: Final submittal at final completion.

1.10 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

1.11 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.12 COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Completion: Complete the following a minimum of **ten (10) business days** prior to requesting inspection for determining date of Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting County unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit close-out submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit close-out submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Construction Manager. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Construction Manager's signature for receipt of submittals.
 5. Submit testing, adjusting, and balancing records.
 6. Submit changeover information related to County's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Completion: Complete the following a minimum of **ten (10) business days** prior to requesting inspection for determining date of Completion. List items below that are incomplete at time of request.
1. Advise County of pending insurance change-over requirements.
 2. Make final change-over of permanent locks and deliver keys to County. Advise County's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Completion.
 5. Instruct County's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in **Section 01 79 00** (Demonstration and Training).
 6. Advise County of change-over in utility services.
 7. Participate with County in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements.
 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Review: Submit a written request for review to determine Completion a minimum of **10 (ten) business days** prior to date the Work will be completed and ready for final review and tests. On receipt of request, Architect and Construction Manager will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Completion after review or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Request re-review when the Work identified in previous reviews as incomplete is completed or corrected.
 2. Results of completed review will form the basis of requirements for final completion.

1.13 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to **Section 01 29 00** (Payment Procedures).
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Completion review list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of **10 (ten) business days** prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. The Construction Manager will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
- C. The Contractor shall close-out the SWPPP and fill a Notice of Termination with the State Water Board.

1.14 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order,
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect and Construction Manager.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect, through Construction Manager, will return annotated file.

1.15 SUBMITTAL OF PROJECT WARRANTIES - See **Section 01 78 36** (Warranties).

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Completion, or when delay in submittal of warranties might limit County's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 1. Submit by email to Construction Manager.
- D. Warranties in Paper Form:
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 – PRODUCTS

Not applicable.

PART 3 – EXECUTION

Not applicable.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 78 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- B. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Requirements Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.
- B. Related Sections
 - 1. Section 01 33 00 (Submittal Procedures)

1.03 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.04 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect and Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 - 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.
- C. Initial Manual Submittal: Submit draft copy of each manual at least **thirty (30) business days** before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Completion and at least **fifteen (15) business days** before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
 - 1. Correct or revise each manual to comply with comments. Submit copies of each corrected manual within **fifteen (15) business days** of receipt of comments and prior to commencing demonstration and training.

PART 2 – PRODUCTS

2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.02 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Architect.
 - 8. Name and contact information for Commissioning Authority.
 - 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. "Manual Contents" Paragraph below describes typical requirements for binding copies of operation and maintenance manuals. Revise to suit Project.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents by CSI format for system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Electronic Files: Use electronic files specific to Project and prepared by manufacturer. If scanning of paper documents is required due to manufacturer's prepared electronic documents are not available, configure scanned file for 150 dpi with all text in document being legible and OCR (Optical Character Recognition) conversion performed. Each electronic file shall be searchable with standard PDF reading software.
 - 2. File Names and Bookmarks: Bookmark individual documents (specification sections) based on file names and divisions within each file. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into

individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Bookmark warranty and maintenance requirements for each system and subsystem separately. Configure electronic manual to display bookmark panel on opening file.

3. Hyperlink: Provide hyperlink from overall table of contents to each system.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.03 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 - a. Water leak.
 4. Power failure.
 5. Water outage.
 6. System, subsystem, or equipment failure.
 7. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.04 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated in the Contract Documents.
 - 2. Performance and design criteria if Contractor has delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.

- B. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated in the Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.

- C. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.
 - 3. Routine and normal operating instructions.
 - 4. Regulation and control procedures.
 - 5. Instructions on stopping.
 - 6. Normal shutdown instructions.
 - 7. Seasonal and weekend operating instructions.
 - 8. Required sequences for electric or electronic systems.
 - 9. Special operating instructions and procedures.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.05 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.

- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.

- 4. Schedule for routine cleaning and maintenance.
- 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 – EXECUTION

3.01 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
 - 2. Comply with requirements of newly prepared record Drawings in **Section 01 78 39** (Project Record Documents).
- G. Comply with **Section 01 77 00** (Closeout Procedures) for schedule for submitting operation and maintenance documentation.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 78 36

WARRANTIES

PART I - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions of the Contract, including General Conditions and Division 01 General Requirements, apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

The work included herein consists of furnishing and paying for all labor, materials, equipment, scaffolding, transportation and services required to provide all guarantees and warranties as described hereafter and/or shown on the Drawings.

1.03 WORK SPECIFIED UNDER OTHER SECTIONS

Consult all other Sections, determine the extent and character of related Work and properly coordinate the Work specified herein with that specified elsewhere to produce a complete, finished and workmanlike installation.

PART 2 - PRODUCTS

2.01 GUARANTIES

- A. Warranties shall be in addition to, and NOT a limitation of, other rights County may have against Contractor under the Contract Documents or which may be prescribed by law, regardless of wording of warranty.
- B. Contractor shall assign to County any warranties issued by outside equipment and material manufacturers and Subcontractors. All warranties so assigned shall be in addition to and not in lieu of all warranties required under the terms of this **subsection 2.01**.
- C. Separate guarantees furnished for particular portions of the Work as specified under the pertinent sections of the Specifications shall be submitted on the Contractor's letterhead in the following form:

GUARANTY-WARRANTY FOR _____

Contractor hereby warrants and guarantees that any item of the Work that we have performed for the **Amador County Buena Vista Landfill Improvements** has been done in accordance with the Contract Documents, and that the Work as installed will fulfill the requirements of the guaranty-warranty included in the Contract Documents.

We agree to repair or replace any or all of the Work together with any other adjacent work that may be displaced by so doing that may prove to be in its workmanship or materials within a period of **one (1)** year from the date of Final Acceptance of the Buena Vista Landfill Improvement Project by County without any expense whatsoever to County, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within **sixty (60) days** after being notified in writing by the County, we collectively or separately do hereby authorize the County to proceed to have such defects repaired and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed

Countersigned by Contractor

- D. Guaranteed period for all work, materials and equipment shall begin on the date of Final Acceptance, NOT when Subcontractor has completed his work, nor when equipment is turned on.

PART 3 - EXECUTION

3.01 DELIVERY

Compile required and incidental warranties required by these Requirements. Materials shall be folded and bound as required to fit an 8" by 11" format, suitable for filing. Deliver binder, with table of contents and clearly marked with the building designation, to Construction Manager.

END OF SECTION

DIVISION 01 GENERAL REQUIREMENTS
SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. This section specifies administrative and procedural requirements for Project Record Documents.
- B. The Project Record Documents required include:
 - 1. Marked-up copies of Contract Drawings
 - 2. Marked-up copies of Shop Drawings
 - 3. Newly prepared Drawings
 - 4. Marked-up copies of Specifications, Addenda and Change Orders
 - 5. Marked-up Submittals
 - 6. Record Samples
 - 7. Field records for variable and concealed conditions
 - 8. Record information on Work that is recorded only schematically
 - 9. ACAD documents of “as built” drawings.
- C. Specific Project Record Documents requirements that expand requirements of this Section are included in the individual Sections of **Divisions 2 through 33**.
- D. General Project Record closeout requirements are included in **Section 01 77 00** (Closeout Procedures).
- E. Maintenance of Documents and Samples:
 - 1. Store Project Record Documents and samples in the field office apart from the Contract Documents used for construction.
 - 2. Do not permit Project Record Documents to be used for construction purposes.
 - 3. Maintain Project Record Documents in good order, and in a clean, dry, legible condition.
 - 4. Make documents and samples available at all times for inspection by County, Architect or Engineer or Construction Manager throughout the performance of the Work and for a period of **two (2)** years following recordation of Notice of Completion.

1.02 PROJECT RECORD DRAWINGS

- A. Mark-up Procedure: During the construction period, maintain a set of blue/line or black/line prints of the Contract Drawings and Shop Drawings for Project Record Document purposes.
 - 1. Mark these Drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
 - a. Dimensional changes to the Drawings.
 - b. Revisions to details shown on the Drawings.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - i. Changes made by Change Order.
 - k. Details not on original Contract Drawings.
 - 2. Mark completely and accurately the Project Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
 - 3. Mark Project Record Drawing sets with red erasable colored pencil; use other colors to distinguish between changes for different categories of the Work at the same location.

4. Mark important additional information which was either shown schematically or omitted from the original Drawings.
5. Note construction change directive numbers; alternate numbers; Change Order numbers and similar identification.
6. Responsibility for Mark-up. Where feasible, the individual or entity who obtained the Project Record Drawing data, whether the individual or entity is the installer, Subcontractor, or similar entity, is required to prepare the mark-up on Project Record Drawings.
 - a. Accurately record information in an understandable and legible drawing technique.
 - b. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the mark-up prior to concealment.
7. At the time of Completion, submit the Project Record Drawings to the Construction Manager for County's records. Submit two (2) blackline or blue line prints and two reproducible sets of Project Record Drawings as well as **two (2)** copies of each drawing on electronic media formatted for use with AutoCAD 2014 or newer. Organize into sets, bind and label sets for County's continued use.

1.03 PROJECT RECORD SPECIFICATIONS

- A. During the construction period, maintain one copy of the Project Specifications, including addenda and modifications issued, for Project Record Document purposes.
 1. Mark the Project Record Specifications to indicate the actual installation where the installation varies substantially from that indicated in the Specifications and Addenda and modifications issued. Note related Project Record Drawing information, where applicable. Give particular attention to substitutions, selection of product options, and information on concealed installation that would be difficult to identify or measure and record later.
 - a. In each Specification Section where products, materials or units of equipment are specified or scheduled, mark the copy with the proprietary name and model number of the product furnished.
 - b. Record the name of the manufacturer, supplier and installer, and other information necessary to provide a record of selections made and to document coordination with Project Record Product Data submittals and maintenance manuals.
 - c. Note related Project Record Product Data, where applicable, for each principal product specified, indicate whether Project Record Product Data has been submitted in the maintenance manual instead of submitted as Project Record Product Data.
 2. Upon completion of mark-up, submit the Project Record Specifications to the Construction Manager for County's records.

1.04 PROJECT RECORD PRODUCT DATA

- A. During the construction period, maintain one copy of each of the Project Record Product Data submittals for Project Record Document purposes.
 1. Mark Project Record Product Data to indicate the actual product installation where the installation varies substantially from that indicated in the Project Record Product Data submitted. Include significant changes in the product delivered to the Site, and changes in manufacturers' instructions and recommendations for installation.
 2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 3. Note related Change Orders and mark-up of Project Record Drawings, where applicable.
 4. Upon completion of mark-up, submit a complete set of the Project Record Product Data to the Construction Manager for County's records.
 5. Where the Project Record Product Data is required as part of maintenance manuals, submit the marked-up Project Record Product Data as an insert in the manual, as well as submittal as Project Record Product Data.
 6. Contractor is responsible for mark-up and submittal of Project Record Product Data for all Work.

1.05 MATERIAL, EQUIPMENT AND FINISH DATA

- A. Provide data for primary materials, equipment and finishes as required under each Specification section.
- B. Submit two sets prior to final inspection, bound in 8-1/2 inch by 11 inch three-ring binders with durable plastic covers; provide typewritten table of contents for each volume.
- C. Arrange by Specification division and give names, addresses, and telephone numbers of Subcontractors and suppliers. List:
 1. Trade names.

2. Model or type numbers.
3. Assembly diagrams.
4. Operating instructions.
5. Cleaning instructions.
6. Maintenance instructions.
7. Recommended spare parts.
8. Product data.

1.06 MISCELLANEOUS PROJECT RECORD SUBMITTALS

- A. Refer to other Specification sections for miscellaneous record keeping requirements and submittals in connection with various construction activities. Immediately prior to Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for use and reference. Submit to the Construction Manager for County’s records.
 1. Categories of requirements resulting in miscellaneous records include, but are not limited to, the following:
 - a. Field records on excavations and foundations
 - b. Field records on underground construction and similar work
 - c. Survey showing locations and elevations of underground lines
 - d. Invert elevations of all piping
 - f. Authorized measurements utilizing unit prices or allowances
 - g. Records of plant treatment
 - h. Ambient and substrate condition tests
 - i. Certifications received in lieu of labels on bulk products
 - j. Batch mixing and bulk delivery records
 - k. Testing and qualification of tradespersons
 1. Documented qualification of installation firms
 - m. Load and performance testing
 - n. Inspections and certifications by governing authorities
 - o. Leakage and water-penetration tests
 - p. Fire resistance and flame spread test results
 - q. Final inspection and correction procedures

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE

Maintain one copy of each submittal during construction for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur. ***Do not wait until the end of the Project.*** Construction Manager will periodically review the Project Record Documents to assure compliance with this requirement.

END OF SECTION

**BUENA VISTA LANDFILL CLASS III
PHASE I WMU FINAL COVER RECONSTRUCTION
CLASS II SURFACE IMPOUNDMENT LINER
IMPROVEMENT PROJECT**

**TECHNICAL
SPECIFICATIONS**

VOLUME 1

APTIM/NV5

**Amador County
Buena Vista Landfill
6500 Buena Vista Road
Ione, California 95640**

DIVISION 02 EXISTING CONDITIONS
SECTION 02 20 00
PROTECTING EXISTING COMPONENTS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall always take care while working on both the Class III Phase I WMU final cover repair and the Class II surface impoundment to prevent and minimize damage to any of the existing components and monitoring devices that will remain in-place and operational during and after construction is completed.

1.02 PROTECTION OF EXISTING HYPALON® GEOMEMBRANE

- A. The contractor shall always take care while working on or adjacent to the surface of the existing in-place Hypalon® geomembrane to minimize damaging it with punctures, tears and other yet to be identified forms of damage. The contractor shall immediately notify the CQA monitor of any damages so that they can be documented and repaired.
- B. Since Hypalon® geomembrane materials cannot be heat-fusion welded to HDPE geomembranes and glued seams are not allowed due to various contaminants in the glues APTIM-NV5 propose to repair identified damaged areas of the existing Hypalon® geomembrane by placing a geosynthetic clay liner (GCL) patch over the damaged areas. The GCL patch shall extend to a minimum distance of 24 inches in all directions from the damaged location.
- C. The contractor shall always take care to minimize damage to existing and proposed polyvinylchloride (PVC) and HDPE pipes. The contractor shall immediately notify the CQA monitor of any damages that need repairs.
- D. The contractor shall not install any proposed liner components over the existing in-place Hypalon® geomembrane and/or the proposed HDPE geomembrane when the ambient air temperature at a minimum of 6 inches (± 1 inch) above the geomembrane meets or exceeds 120 degrees Fahrenheit (°F).

1.03 MONITORING DEVICE PROTECTION

- A. The contractor shall locate and protect utilities and monitoring devices and representative appurtenances as shown on the construction plans, including but not limited to monitoring wells, piezometers, lysimeters, sumps, vaults, piping/tubing, casing, boreholes, seals, annular grout, concrete base, protective covers and bollards. The contractor shall place temporary barricades, fencing, flagging and other means to around all existing monitoring devices within the construction area to alert construction personnel to the presence of sensitive devices and equipment and to prevent and/or minimize entrance of personnel and equipment into those areas.
- B. The discharger and contractor shall take representative pictures of each monitoring device both prior to and following construction to document its pre-construction and post-construction conditions to determine if any monitoring devices have been damaged by the

contractor during construction.

- C. After construction is completed the discharger (County) shall demonstrate that all monitoring wells, piezometers, and other measurement, sampling, and analytical devices are operating and maintained so that they perform to design specifications throughout the life of the monitoring program [40CFR§258.51©(2)].
- D. After construction is completed, the discharger shall replace monitoring devices that cannot be operated and maintained to perform to design specifications due to damage caused by the contractor during construction after review and approval by the California Regional Water Quality Control Board Central Valley Region of a report (i.e., work plan) for the proposed replacement devices (WDRs R5-2022-0025, Standard Provision and Reporting Requirements, I.20).

1.04 REPORTING POSSIBLE AND ACTUAL DAMAGE

- A. The contractor shall immediately notify the CQA monitor upon discovery of potentially damaged and/or actual damaged existing components and monitoring devices.
- B. The discharger shall immediately notify the California Regional Water Quality Control Board Central Valley Region via telephone or email and submit within seven days a written report with information including photographs, map(s) depicting the location(s) of damaged monitoring device(s), a description(s) of the damage(s) (e.g. all pertinent observations and analyses), a description of the corrective action measure(s) employed, and a timeline to repair the damaged monitoring device(s).

1.05 RELATED SECTIONS

- E. Section 01 14 13 - Mobilization
- F. Section 31 05 16 – Aggregate Base Rock
- G. Section 31 05 19.13 – Geotextile
- H. Section 31 05 19.16 – Geomembranes
- I. Section 31 05 19.26 – Geocomposite
- J. Section 31 05 19.29 – Leak Detection System
- K. Section 31 10 00 - Clearing, Grubbing and Stripping
- L. Section 31 20 00 - Earthwork
- M. Section 31 20 13 – Vegetative Soil Cover
- N. Section 31 21 00 – Waste Excavation and Placement
- O. Section 31 23 13 – Subgrade Preparation
- P. Section 31 23 33 - Geosynthetic Materials Anchor Trenches
- Q. Section 31 25 00 - Erosion and Sediment Controls
- R. Section 31 25 14.16 – Geosynthetic Overside Drains

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 NOT USED

-END OF SECTION-

DIVISION 03 CONCRETE
SECTION 03 21 00
CONCRETE REINFORCEMENT

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the general requirements for concrete reinforcement placement at the Crazy Horse Landfill. Concrete reinforcement includes reinforcing steel bars and welded wire fabric for reinforcing cast-in-place concrete.

1.02 SUBMITTALS

- A. Steel: The Contractor shall furnish a certificate from the reinforcement supplier(s) stating that the reinforcement meets the requirements of this Specification.
- B. Shop Drawings: Submit drawing(s) showing bar schedules, shapes, lengths and proposed bar placement.

1.03 REFERENCES

- A. ACI 318 - Building Load Requirements for Structural Concrete.
- B. ASTM A884 - Specification for Epoxy Coated Steel Welded Wire Fabric for Concrete Reinforcement.
- C. ASTM A615 - Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- D. ASTM D3963 - Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars.

PART 2: PRODUCTS

2.01 GENERAL

- A. The cleaning, placing, spacing, bending and splicing of reinforcement shall conform to the applicable provisions of ACI 318 unless otherwise shown on the Drawings.

2.02 REINFORCING BARS

- A. All reinforcing bars shall be new deformed billet-steel bars conforming to the requirements of ASTM A615, Grade 60. The steel bars shall be epoxy-coated in accordance with ASTM D3963.
 1. Deformed bars conforming to ASTM A615, including Supplementary Requirements S1.

DIVISION 03 CONCRETE
SECTION 03 21 00
CONCRETE REINFORCEMENT

2. No. 3 to No. 11 Bars: Grade 60.
3. Ties and Stirrups: Grade 40 or 60.
4. Dowels Requiring Field Bending: Grade 40 or 60.

2.03 WELDED WIRE FABRIC

- A. Epoxy-coated welded wire fabric shall conform to specifications of ASTM A884. Where the size, mesh and weight of the fabric are not indicated or specified otherwise, use 6 by 6 - W2.9 fabric weighing approximately 42 lbs/100 ft².

PART 3: EXECUTION

3.01 FABRICATION AND CLEANING

- A. Before the reinforcement is embedded in concrete, it shall be free of mortar, dirt, oil, grease or other coatings that would destroy or reduce the bond between the reinforcement and the concrete. Care shall be taken not to damage any epoxy-coated reinforcement steel bars.
- B. Care shall be taken not to damage the epoxy-coating of the reinforcement steel bars during shipping, handling and placement in accordance with Specification 52-1.02B of the CALTRANS Standard Specification.
- C. Reinforcement shall be accurately formed to the dimensions indicated on the drawings. All bars shall be bent cold. Reinforcement shall not be straightened or rebent. Bars with kinks or bends not shown on the drawings shall not be used. Heating or welding of the reinforcement shall not be permitted; except, bars may be flame cut to length.

3.02 PLACING

- A. Epoxy-coated reinforcement steel bars shall be secured with plastic or epoxy-coated tie wire, bar chairs or other metallic devices per Section 52-1.02A of the CALTRANS Standard Specification to protect the epoxy coating of the reinforcement steel.
- B. Reinforcement shall be accurately positioned and secured against displacement by using annealed iron wire ties (16 gage or heavier), or suitable clips, at intersections and shall be supported by concrete or metal supports, spacers, or hangers.
- C. In all cases, sufficient supports for horizontal reinforcement shall be used so that there will be no sagging of the bars. In slabs-on-grade, reinforcement shall be supported by means of precast mortar blocks. The blocks shall have a horizontal surface approximately 3 inches by 4 inches. The reinforcement in

DIVISION 03 CONCRETE
SECTION 03 21 00
CONCRETE REINFORCEMENT

all other slabs and in beams shall be supported by means of metal chairs.
Other details of reinforcement placement are shown on the Drawings.

- D. All reinforcement shall be placed in accordance with Section 52-1.07 of the CALTRANS Standard Specifications.

- END OF SECTION -

DIVISION 03 CONCRETE
SECTION 03 30 53
CAST-IN-PLACE CONCRETE

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section applies to the construction of cast-in-place concrete for the Crazy Horse Landfill Closure Project. Cast-in-place concrete shall be used for, but not limited to, culvert encasements, culvert downdrains, inlet/outlet structures, slab-on-grade, footings and drainage ditches and channels.

1.02 1.2 RELATED SECTIONS

- A. Section 02220 - General Excavation and Backfill
- B. Section 02750 – Drainage Facilities
- C. Section 03100 - Concrete Formwork
- D. Section 03200 - Concrete Reinforcement
- E. Section 03361 - Shotcrete

1.03 REFERENCES

- A. American Concrete Institute (ACI), latest edition:
 - 1. ACI SP-66 - ACI Detailing Manual.
 - 2. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
 - 3. ACI 305R - Hot Weather Concreting.
 - 4. ACI 306R - Cold Weather Concreting.
 - 5. ACI 318 - Building Code Requirements for Structural Concrete.
 - 6. ACI 347 - Recommended Practice for Concrete Formwork.
- B. American Society for Testing and Materials (ASTM), latest editions:
 - 1. ASTM C31 - Making and Curing Concrete Test Specimens in Field
 - 2. ASTM C33 – Concrete Aggregates
 - 3. ASTM C39 - Test Methods for Compressive Strength of Cylindrical

DIVISION 03 CONCRETE
SECTION 03 30 53
CAST-IN-PLACE CONCRETE

Concrete Specimens.

4. ASTM C94 - Specification for Ready Mixed Concrete.
 5. ASTM C143 - Test Method for Slump of Portland Cement Concrete.
 6. ASTM C150 - Specification for Portland Cement.
 7. ASTM C231 - Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 8. ASTM C260 - Specification for Air-Entraining Admixtures for Concrete.
 9. ASTM C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 10. ASTM C494 - Specification for Chemical Admixtures for Concrete.
- C. Concrete Reinforcing Steel Institute (CRSI) most current version.
1. Placing Reinforcing Bars.
- D. State of California Department of Transportation (CALTRANS) Standard Specifications, latest edition.

1.04 SUBMITTALS

- A. Written statement by ready mix supplier giving source and material certificates; proportions by weight of cement, fine, and coarse aggregates; and admixtures.
- B. Provide duplicate delivery tickets with each load of concrete delivered, one for Contractor and one for CQA Engineer, with the following information:
 1. Date and serial number of ticket.
 2. Name of ready mixed concrete plant, operator, and job location.
 3. Type of cement, admixtures, if any, and brand name.
 4. Cement content (in bags per cubic yard of concrete) and mix design.
 5. Truck number, time loaded, and name of dispatcher.
 6. Amount of concrete in load (in cubic yards), delivered.
 7. Maximum size aggregate.

DIVISION 03 CONCRETE
SECTION 03 30 53
CAST-IN-PLACE CONCRETE

8. Gallons of water added at job, if any, and slump of concrete after water was added.
 9. Temperature of concrete at delivery.
 10. Number of revolutions of mixer.
- C. Reinforcing steel Shop Drawings conforming to ACI SP-66 showing bending diagrams, assembly diagrams, location diagrams, splicing and laps of bars, shapes, dimensions, and details for bar reinforcing and stirrup spacing.

1.05 TOLERANCES

- A. Concrete shall be within ¼-inch of a 10 foot straightedge in all directions except where slabs are dished for drains. Deviations from elevation indicated shall not exceed ¼-inch.

1.06 QUALITY ASSURANCE

- A. Testing
1. Sampling and testing will be performed by an independent testing laboratory and paid for by the CQA Engineer.
 2. Perform slump tests (ASTM C143), air-entrainment tests (ASTM C231), and compressive strength tests (ASTM C31 and C39) daily for each class of concrete poured.

1.07 JOB CONDITIONS

- A. Hot Weather
1. Comply with ACI 305R.
 2. Concrete temperature shall not exceed 90° F. At air temperatures of 80° F or above, keep concrete as cool as possible during placement and curing. Cool forms by water wash.
- B. Cold Weather
1. Comply with ACI 306R.
 2. Temperature of reinforcement, forms, fillers, and other materials in contact with concrete at time of placement shall not be less than 35° F.
 3. Maintain air and forms in contact with concrete sections having minimum dimension less than 12 inches at temperature above 50° F for at least the first 3 days and at temperature above 32° F for

DIVISION 03 CONCRETE
SECTION 03 30 53
CAST-IN-PLACE CONCRETE

remainder of the specified curing period.

4. Maintain air and forms in contact with concrete in more massive sections at temperature above 40° F for at least the first three days and at temperature above 32° F for remainder of the specified curing period.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Cement, except as otherwise specified herein, shall be a brand of Portland Cement, approved by the Engineer, conforming to Section 90-2.01 and shall be Type I (MS) Modified or Type II. Only one brand of cement shall be used throughout the duration of this Contract.
- B. All aggregates shall conform to Section 90-2.02 of the CALTRANS Standard Specifications.
 1. Fine aggregate shall consist of natural sand or manufactured sand conforming to the requirements of Section 90-2.02B of the CALTRANS Standard Specifications.
 2. Coarse aggregate shall conform to Section 90-2.02A of the CALTRANS Standard Specifications. The maximum particle size shall not exceed $\frac{3}{4}$ inch.
- C. Air-entraining admixture shall conform to the requirements of Section 90-4 of the CALTRANS Standard Specifications.
- D. Concrete admixtures shall conform to Section 90-4 of the CALTRANS Standard Specifications. Admixtures shall not be used unless approved by the Engineer.
 1. The following chemical admixtures may be used in accordance with Section 90-4.05 of the CALTRANS Standard Specifications.
 - a. Water-reducing;
 - b. Retarding; and
 - c. Water Reducing and Retarding.
- E. Water used for mixing concrete shall be potable conforming to Section 90-2.03 of the CALTRANS Standard Specifications.
- F. Steel reinforcing bars shall be in accordance with Section 03200 of the Technical Specifications.

DIVISION 03 CONCRETE
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- G. Membrane Forming Curing Compound
1. ASTM C309 and compatible with schedule finishes and coatings.
 2. Concrete Seal by Huntington Laboratories; Toxkure by Tock Brothers, Inc; Kure-N-Seal by Sonneborn Building Products, Inc; Floor Treet by Forrer Chemical Company, or equal.

2.02 CONCRETE MIX DESIGN

- A. The general concrete mix design shall conform to the requirements of Section 90-1.01 of the CALTRANS Standard Specification for Class A concrete and the following requirements:
1. The concrete shall have a minimum 28-day compressive strength of 3000 psi.
 2. The concrete shall have a minimum cement content of 564 lbs/yd³.
 3. The concrete shall have an air content of 5% with a tolerance of + 1% as determined by ASTM C231.
 4. Maximum Slump: 4 inches.

2.03 MIXING AND DELIVERY

- A. Furnish and deliver concrete in conformance with ASTM C94.
- B. Deliver and complete discharge within 1½ hours of commencing mixing or before 300 revolutions of drum or blades, whichever comes first. This includes revolutions required by transmit mix trucks. Limitations may be waived by CQA Engineer if concrete is of such slump after 1½ hours or 300-revolution limit that it can be placed without the addition of water.
- C. Do not add water on job unless authorized by CQA Engineer. If water is added, additional mixing of 30 drum revolutions is required.

PART 3: EXECUTION

3.01 SUBGRADE PREPARATION

- A. Subgrade and bedding shall be compacted and free of frost. If placement is allowed at temperatures below freezing, provide temporary heat and protection as required to remove frost.
- B. Where vapor barrier is not specified, at Contractor's option, provide vapor barrier or soak subgrade for 8 hours prior to placement and sprinkle ahead of placement of concrete.

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- C. Remove standing water, ice, mud, and foreign matter before concrete is deposited.

3.02 FORMS

- A. Formwork shall conform with Section 03100 of the Technical Specifications.

3.03 CONCRETE REINFORCEMENT

- A. Concrete reinforcement shall conform to Section 03200 of the Technical Specifications.

3.04 CONCRETE PLACEMENT

- A. Except as modified herein, ACI 304 - Chapter IV, shall constitute requirements of this Specification.
- B. Take care to avoid damage to reinforcing and ensure its accurate positioning after concrete is placed.
- C. Do not spread concrete with vibrators.
- D. Pour each slab in one continuous operation.
- E. Place concrete with aid of internal mechanical vibrator equipment capable of 7000 impulses per minute. Transmit vibration directly to concrete. Duration of vibration at any location shall be as necessary to produce thorough consolidation and also to cause maximum amount of air bubbles to migrate to the top of the pour.
- F. Place items constructed of dissimilar metals to avoid physical contact with reinforcing. Secure item and reinforcing to ensure they will not shift and come into contact during pouring. Contact between reinforcing and any other metal, other than bare, coated, or plated carbon steel will not be permitted unless reviewed by CQA Engineer.

3.05 FINISHING

- A. Concrete shall have a smooth finish unless otherwise indicated on the Drawings.

3.06 PROTECTION AND CURING

- A. The concrete shall be cured in accordance with Section 90-7 of the CALTRANS Standard Specifications.

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- B. The concrete shall be protected in accordance with Section 90-8 of the CALTRANS Standard Specifications.
- C. Protect from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration.
- D. Protect finished concrete surfaces from damage caused by construction equipment, materials or methods, and rain or running water.

- END OF SECTION -

DIVISION 04 MASONRY
SECTION 04 22 00

ULTRABLOCK GRAVITY WALL SYSTEM

PART I: GENERAL

1.01 Summary Description

- A. This section includes ULTRABLOCK™ gravity retaining wall systems consisting of a column of ULTRABLOCK™ segmental concrete facing units retaining compacted soil backfill or a native ground cut. Work shall consist of furnishing all materials, labor, equipment, field supervision, and installing a ULTRABLOCK™ gravity wall system in accordance with given specifications. All installations should conform with project drawings provided by the Owner or the Owner's Engineer.
- B. Related Sections
 - 1. Section 31 20 00- Earthwork

1.02 Reference Standards

- A. Any reference standards that are not applicable to the project should be deleted. If there is a conflict between the given specifications and reference standards, the Owner's Engineer should make the final determination of applicable documents.
- B. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. LRFD
 - 2. Standard Specifications for Transportation Materials and Methods of Sampling and Testing, Washington, D.C., August 1986
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM D422 – Standard Test Method for Gradation of soils
 - 2. ASTM D424 – Standard Test Method for Determination of Atterberg Limits of Soils
 - 3. ASTM DG51 – Standard Test Method for Determination of Soil pH
 - 4. ASTM D698, D1997 – Standard Specification for Moisture Density Relationship for Soils, Standard Proctor and Modified Proctor Methods
 - 5. ASTM C33-99 - Standard Specification for Concrete Aggregates
 - 6. ASTM D3034 – Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe
 - 7. ASTM D1248 – Standard Specification for Corrugated Plastic Pipe

8. ASTM C150 – Use of Cement in Concrete Blocks
 9. ASTM C260 – Use of Admixtures in Concrete
 10. ASTM C494 – Use of Admixtures in Concrete
 11. ASTM C805 – Schmidt Hammer Test for the determination of Compressive Strength of Concrete
- D. National Concrete Masonry Association (NCMA)
- E. Ultrablock, Inc.
1. Design Manual for Ultrablock Wall Systems, 4th Edition July 2008

1.03 Definitions

- A. ULTRABLOCK™ Unit – A segmental concrete unit with shear keys generally made of "surplus concrete mix" in the yard of a ready-mix concrete supplier.
- B. Gravity Soil Mass - Compacted structural fill placed immediately behind the wall, which contributes to the gravity mass of the wall structure.
- C. Drainage Fill - Free-draining, well-graded and coarse-grained aggregates placed immediately behind the blocks to relieve hydrostatic pressures or seepage forces and to prevent clogging of aggregate drainage medium if a geotextile fabric is not used.
- D. Retained Soil - Native soils or compacted structural fill situated immediately behind drainage fill. The primary function of the gravity wall is to retain this soil mass without failure.
- E. Leveling Pad / Wall Foundation - Densely compacted and free draining crushed rock pad for distributing the weight of block wall over a wider area and for providing a working surface during construction.
- F. Foundation Subgrade - Competent native soil subgrade or compacted structural fill subgrade for supporting the block wall structure as approved by a qualified geotechnical engineer.
- G. Drainage / Discharge Pipe - Perforated pipe with adequate flow capacity placed typically at the base of the wall to discharge collected water into suitable receptacle by gravity flow. Location of discharge pipe behind the wall depends upon the drainage requirements of the wall structure and the design of drainage system.
- H. Drainage Swale - A small depression adjacent to the top of wall to collect surface water run-off and discharge by gravity flow.

- I. Geotextile filter – A filter fabric (with adequate permittivity or porosity) placed against the retained soil mass or between drainage media and retained soil mass to minimize clogging of drainage media.
- J. Backslope - Retained soil slope behind the wall. Slope inclination, β , is measured clockwise from the horizontal plane.
- K. Foreslope / Toeslope - Downslope in front of the toe of wall.
- L. Retained /Structural Backfill – Compacted structural fill placed behind the drainage fill or directly behind the ULTRABLOCK units as outlined on the plans.

1.04 System Description

- A. Design Requirements - Design the retaining wall system in accordance with the design guidelines presented in Design Manuals for ULTRABLOCK™ Gravity Wall Systems, 2008 provided by Ultrablock, Inc. Engage and pay for the services of a Designer to design and develop Design Data for the retaining wall system.
- B. Performance Requirements – The contractors, material suppliers, and wall system suppliers shall have sufficient past project experience and shall be approved by the Owner’s Engineer at least two weeks prior to the bid opening.

1.05 Submittals

- A. Following submittals shall be made 30 days prior to the start of construction. In addition, the contractor shall provide a list of successfully completed projects along with related project references.
- B. Geotechnical Reports – A geotechnical report prepared in accordance with local regulatory and industry standards shall be submitted for wall areas including any required slope stability analyses results.
- C. Product Data – Manufacturer’s materials specifications, installation instructions, and general recommendations.
- D. Plans – Engineering drawings, cross-sections, elevations, and large scale details of elevation, typical sections, details, and connections. Plans shall be stamped and signed by a qualified registered Professional Engineer.
- E. Quality Control and Certification Submittals - Design calculations and plans for the retaining

wall system. All design data shall be stamped by the Designer. The designer shall be a qualified registered Professional Engineer.

1.06 Quality Assurance

- A. Pre-Construction Meeting – A meeting between the geotechnical engineer, wall designer, contractor, material supplier, subcontractors, and the owner shall be held at the site in order to review the retaining wall design and construction requirements. A notification shall be sent to all the parties at least three 3 days in advance of the time of the meeting.
- B. Designer – The firm designing the wall shall have liability insurance (Errors and omissions) of at least \$1,000,000.00 per occurrence. The designer shall be a registered professional engineer, registered in the state where the project is located.

1.07 Delivery, Storage, and Handling

- A. At the time of delivery, the contractor shall inspect and confirm proper type and grade of materials. All product specifications shall be reviewed to assure that all specified materials have been delivered.
- B. The contractor shall store and handle all materials in accordance with manufacturer's recommendations. The contractor shall avoid excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to materials.
- C. The contractor shall discard all damaged materials and not use them in wall construction.

PART 2 PRODUCTS

2.01 Manufacturers

- A. Ultrablock, Inc. and Inter-Block, Inc. are the sole domestic manufacturers of the Segmental Concrete Facing Units.

2.02 Materials

- A. The ULTRABLOCK™ units shall have 28-day compressive strength of at least 2,200 psi. The maximum absorption of 10 pcf and adequate freeze-thaw protection (absorption by weight 6%) shall, in general, satisfy the local requirements of high elevation (mountainous) areas where there is a potential for spalling due to freeze-thaw .

- B. All individual ULTRABLOCK™ units shall be free of cracks and other defects that would interfere with the placement and locking of units. All shear keys shall be in good condition.
- C. ULTRABLOCK™ Unit dimensions such as height, width, depth, and batter shall match details shown on plans. A tolerance of $\pm 1/2$ inch for length, width tolerance of plus $1/2$ inch and minus $3/4$ inch and a tolerance of $\pm 1/4$ inch shall be used for height. Blocks are typically poured face down creating a nonfinished side on the back of block.
- D. Architectural features such as surficial finishes, and color of ULTRABLOCK™ units shall match details shown on plans. Surface coloring or integral coloring generally costs extra.
- E. The chamfered corners of the ULTRABLOCK™ units shall provide approximately 8 in² of drainage area per unit. Clearance of roughly 1/2" around locking grooves/shear keys shall provide additional drainage.

2.03 Drainage Materials

- A. Drainage fill materials shall consist of free draining, all-weather, coarse-grained materials that is placed behind the ULTRABLOCK™ units as specified on the plans. The drainage fill gradation shall be as follows as determined by ASTM D 422 test procedure:
 - 100 to 75 percent passing in a 1-in. sieve 50 to
 - 75 percent passing a 3/4-in. sieve 0 to 60
 - percent passing a No 4 sieve
 - 0 to 50 percent passing a No 40 sieve
 - 0 to 5 percent passing a No 200 sieve
- B. The Engineer and/or Architect may specify a substitute such as a drainage composite or other equivalent geosynthetic drainage materials to be approved by the designer. The drainage composite shall be – 6 oz. per sq.yd. polypropylene non-woven geotextile, AASHTO M288-96, Class 2, bonded to both sides of a polyethylene net structure, produced by _____. Minimum Allowable Transmissivity – Not less than 1.5 gal. per min. per ft. of width when tested in accordance with ASTM D4716-95 at a confirming pressure of 10,000 lbs per sq.ft. Minimum Allowable Peel Strength of Geotextile from the Polyethylene Net shall be not less than 250 gm. per in. of width when tested in accordance with ASTM F904-91.
- C. The drainage collection pipe shall be placed as shown on the plans. The pipe shall be a perforated or slotted, PVC or corrugated HDPE pipe. The pipe shall be wrapped in filter fabric. The pipe shall be manufactured in accordance with ASTM D3034.

PART 3 EXECUTION

3.01 Qualification

- A. The constructor and the site supervisor shall have successfully completed several projects including the installation of ULTRABLOCK™ gravity wall systems. The contractor shall carry adequate insurance and bond.

3.02 Excavation

- A. Prior to the beginning of excavation, a ULTRABLOCK™ supplier's representative experienced in ULTRABLOCK™ wall construction shall assist the contractor regarding wall foundation excavation, specifically the preparation of foundation subgrade for design wall batter and other excavation procedures related to subgrade preparation, placement of blocks, and drainage envelope behind the wall.
- B. The contractor shall provide adequate excavation support during construction in accordance with local, state, and federal safety regulations. It shall be contractor's responsibility to assure site safety during excavation and other construction activities.
- C. The subgrade shall be excavated to meet design requirements shown on grading plans. Excavations shall be made vertically to the plan elevation and horizontally to the designed geogrid lengths so that over-excavation is minimized. Width of excavation should allow for wall base and drainpipe.
- D. Start excavation at the lowest wall level. If wall steps up in one block height, the base block should be installed at the lowest level in order to establish grade and face location of the second level.
- E. Overexcavated or filled areas shall be well compacted and inspected and approved by a qualified geotechnical engineer.
- F. A qualified geotechnical engineer shall evaluate and approve excavated materials that are used as backfill in the reinforcement zone. All backfill materials shall be protected from the weather.

3.03 Foundation Preparation

- A. Foundation trench shall be excavated to the dimensions indicated on the construction drawings.

- B. A qualified geotechnical engineer shall inspect and approve the reinforced zone and leveling pad foundation soil subgrade in order to ensure adequate bearing capacity. Subgrade soil areas not meeting required bearing strength shall be marked in the field and the contractor shall remove and replace these areas with approved fill materials.
- C. Foundation subgrade soils and any backfill materials shall be compacted to a minimum of 95 percent Standard Proctor Dry Density in accordance with ASTM D698-98 before placing the leveling pad.

3.04 Leveling Pad Installation

- A. The leveling pad shall consist of 6 inches thick layer of $\frac{3}{4}$ -inch minus well-graded aggregates compacted to 95% of ASTM D 1996 modified proctor density, unless specified otherwise by the design engineer.
- B. A ULTRABLOCK™ supplier’s representative experienced in ULTRABLOCK™ wall construction shall assist the contractor regarding leveling pad preparation for achieving specified wall batter. The wall designer shall inspect and approve the leveling pad prior to the placement of blocks.
- C. As a minimum, start at the lowest wall level, locate the front face of the wall, run a string about 1 inch in front and 2 inches above the base. Use 2X6 or 2X8 pieces of wood boards and steel stakes to make a form for achieving design batter. Set front board in line with the string and at base elevation of the wall. Locate and place the back board at a distance equal to the base width of the wall. Set elevation of back board so that design batter can be achieved. Without moving the string line, start leap-frogging the boards in line with the string and move forward along the length of the wall. It is best to prepare the entire leveling pad/base before placing the blocks.

3.05 Unit/Block Installation

- A. Installation shall be in accordance with manufacturer guidelines. A detailed installation guide can be found online (www.ultrablock.com).
- B. A track-mounted excavator is the ideal equipment for block installation. A wire rigging with swivel hooks, OSHA approved and rated for weight of the blocks can be attached to the excavator and used for lifting, moving, and placing the blocks.
- C. The contractor shall carefully place the first course of ULTRABLOCK™ units only after the leveling pad has been approved by the designer for adequate batter.

- D. Block placement should start at the lowest elevation. At the start of the wall, make a line perpendicular to the face of the wall so the first block can be placed square to the wall face. Set blocks at the back of the wall first, i.e. if the width of the wall base is larger than the block width, then the first block shall be place at the back followed by the front block.
- E. All ULTRABLOCK[™] units shall be placed together and parallel to the straight or curved line of the wall face.
- F. The ULTRABLOCK[™] units shall be installed free of all protrusions, debris before installing the next course of units and/or placing the geogrid materials.
- G. Do not place any more than 5 to 6 blocks along the first course before starting on the second course.
- H. At the completion of the placement of each course, a string line shall be pulled to confirm that the walls geometry is being maintained.
- I. All battered wall corners shall be installed and locked per the block manufacturer's recommendation as approved by the wall designer.

3.06 Drainage Fill, Unit Fill, and Drainage Pipe Placement

- A. The ULTRABLOCK[™] units do not require core fill since there are no voids.
- B. The drainage backfill shall be placed within an envelope of 12 inches behind the wall and shall consist of a free draining, coarse-grained granular materials or open graded materials meeting the requirements of Section 2.02.03 unless specified otherwise by the designer.
- C. The drainage collection pipe (minimum 3-inch diameter) shall be placed immediately behind the wall at the bottom of the wall with a minimum of 1.5% gradient to maintain a positive gravity flow into a suitable receptacle unless specified otherwise by the designer.

3.07 Retained Backfill Placement

- A. As shown on the plans, the retained backfill material shall be placed in maximum lifts of 10 inches and shall be compacted to a minimum 95 percent Standard Proctor Dry Density in accordance with ASTM D698-98.
- B. Only hand-operated compaction equipment shall be used within 5 feet of the back face of the

ULTRABLOCK™ units. This area shall be compacted to a minimum 90 percent of Standard Proctor Dry Density in accordance with ASTM D698-98.

- C. Soil density testing shall not be performed within 5 feet of the tail of the ULTRABLOCK™ Segmental Concrete facing Units.
- D. The toe of the wall shall be filled and compacted as the wall is being constructed.
- E. The fill areas shall be graded or protected so that any surface water run-off is directed away from the wall face.

3.08 Tolerance

- A. Wall batter tolerance of $\pm 1/8$ in. per ft. maximum shall be allowed.

END OF SECTION

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PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes site earthwork for:
 - 1. Excavations
 - 2. Earthfill
 - 3. Disposal of Excess/Unsuitable Excavated Materials
- B. Related Sections:
 - 1. Section 02110 – Clearing and Grubbing
 - 2. Section 02224 – Vegetative Soil Cover
 - 3. Section 02820 - Hydroseeding

1.02 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM C136 - 06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - 2. ASTM D6913 (2016) Standard Test Method for Particle Size Analysis of Soils
 - 3. ASTM D1140 - 00(2006) Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75 μm) Sieve
 - 4. ASTM D1556 - 07 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method
 - 5. ASTM D1557 - 12 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 6. ASTM D2167 - 08 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - 7. ASTM D2216 - 10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - 8. ASTM D2434 - 68(2006) Standard Test Method for Permeability of Granular Soils (Constant Head)
 - 9. ASTM D2487 - 11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - 10. ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual

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Manual Procedure)

11. ASTM D4643 - 08 Standard Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Heating ASTM D4767 - 11 Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils
12. ASTM D4959 - 07 Standard Test Method for Determination of Water (Moisture) Content of Soil By Direct Heating
13. ASTM D5084 - 10 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
14. ASTM D5321 / D5321M - 13 Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear
15. ASTM D6938 - 10 Standard Test Method for In Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)
16. ASTM D7928 Standard Test Method for Determination of Silt and Clay Size Particle Distribution Using the Hydrometer Method

1.03 SUBMITTALS

- A. Contractor shall submit trench excavation and shoring standard operating procedures for review.

1.04 QUALITY ASSURANCE

- A. The Engineer shall take soil samples and perform moisture, density, gradation, and other tests to ascertain that the work is being performed in compliance with these Specifications. The Engineer shall conduct relative compaction and other tests on the fill, and related laboratory testing (ref. Table 31 20 00 -1). The Contractor shall remove surface material and render assistance as necessary to enable sampling and testing.
- B. Earthfill Placement, Compaction, and Tolerances: See Table 31 20 00-2.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Sources: Materials shall be obtained from identified in-situ soils within the area excavations, on-site borrow areas.
- B. Contractor may take soil samples from the site for analyses after award of Contract.
- C. The Contractor shall visit the project site and assess the various properties of the soil materials that are available within the identified sources, in these Technical Specifications, and as shown on the Construction Drawings.
- D. All material excavated from the wastewater ponds for use as earthfill materials shall be free of organic and other deleterious materials as determined by the Engineer.

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2.02 EARTHFILL

- A. Sources: Excavation of existing soil in the Phase I WMU area and designated borrow area.
- B. Foundation layer and Impoundment Earthfill shall:
 - 1. Consist of clean, silt, clay soils, or clay silt mixtures.
 - 2. Have a maximum particle and aggregation size of 3 inches.

2.03 COMPACTED CLAY LINER

- A. Sources: Excavation of existing soil in the Phase I WMU area and designated borrow area.
- B. Compacted Clay Liner Earthfill shall:
 - 1. Free of visible organics (roots, leaves, grass, etc.), frozen materials, and stones/clods greater than 3-inches. Localized areas containing less than an estimated 5 percent by volume of visible organics and earth clods may be accepted as approved by the Design Engineer on a case-by-case basis.
 - 2. Consist of clean, silt, clay soils, or clay silt mixtures.
 - 3. Gradation with minimum 90% passing US No. 4 sieve.
 - 4. At least 50 percent fines passing the U.S. No. 200 sieve as determined by ASTM D422,
 - 5. Compacted hydraulic conductivity less than or equal to 1×10^{-6} centimeters per second (cm/sec) as determined by ASTM D5084,
 - 6. Liquid Limit between 10 and 50, and Plasticity Index between 5 and 35, as determined by ASTM D4318.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section shall be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected and verified by the Engineer.

3.02 PROTECTION OF EXPOSED SURFACES

- A. During periods of prolonged exposure (more than 1 week) of excavated or filled areas or stockpiles, the Contractor shall provide labor, materials, and equipment, as required to maintain and protect exposed surfaces of cut and fill slopes against wind and water erosion. Contractor shall submit methods to protect exposed surfaces to the Engineer. The Contractor shall be responsible for protective method effectiveness.
- B. The Contractor shall provide labor, material, and equipment to protect the wastewater ponds

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subgrade, as shown on the plans, from rainfall runoff accumulation. Rainfall surface runoff shall be diverted and pumped out of the subgrade. Runoff infiltration into the wastewater ponds subgrade area shall be minimized. Methods used for runoff diversion, pump out and infiltration control shall be submitted for approval by the Engineer.

3.03 EARTHWORK – GENERAL

- A. Identify required lines, levels, contours, and datum before the start of earthwork operations.
- B. Earthwork shall conform to lines and grades indicated on the Construction Drawings and as specified in this section.
- C. Excavated materials, which conform to Specifications, may be used as fill. Excavated materials may be stockpiled for later use.
- D. Contractor shall construct and maintain temporary drainage ditches to provide drainage during construction.
- E. Contractor shall provide siltation control and management during construction.
- F. Contractor shall not damage components of the impoundment including geomembranes, GCL, PVC pipe, and HDPE pipe. Damage caused by the Contractor shall be repaired at the Contractor's expense consistent with the applicable specification requirements.
- G. Contractor may have to screen material to meet maximum aggregation.

3.04 EXCAVATION

- A. After clearing, stripping and grubbing, the contractor shall excavate the existing final cover such that fine grain soil suitable for compacted clay liner reconstruction is segregated and stockpiled from larger grain soils.
- B. General:
 - 1. Excavate in areas and to the grades indicated on the Construction Drawings or specified herein.
 - 2. At all times, the Contractor shall conduct operations in such manner as to prevent free-standing water.
 - 3. Contractor shall remove material that does not meet the specification and disposed of as specified in Article 3.07. The disposed materials shall be replaced with compacted materials meeting the applicable requirements specified in Article 2.02, 2.06, 2.07, and in Table 31 20 00-2.
 - 4. Provide adequate working space within limits of the excavation for personnel safety.
 - 5. The Contractor shall preserve the material below and beyond the lines of all excavation. Where excavation is carried out below grade, the Contractor shall backfill with earthfill to the required grade and conform to the requirements of Table 31 20 00-2 for placement, lift thickness, placement tolerance, subgrade and lift density, moisture content, and test methods.
 - 6. Excavation carried out for the convenience of the Contractor shall conform to the limits approved by the Engineer and shall be at no additional expense.

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7. Excavated material shall be placed at sufficient distance from the edge of excavations to prevent cave-ins or bank slides. Side slopes of stockpiles shall not be steeper than 2:1 (horizontal/vertical). Side slopes of excavations shall be as indicated on the Construction Drawings.

3.05 EXCAVATED MATERIAL STOCKPILES

- A. Materials excavated from the site may be used by the Contractor as fill for construction of various features including berms, site grading, or placed on site at direction of site operator.
- B. If required by the Contractor's schedule or work activities, the material may be placed temporarily in stockpiles at locations approved by the Owner. Material in stockpiles shall be protected from contamination of any kind that would render it unsuitable for use in fills.
- C. The Contractor shall ensure that turbid water from the stockpile areas does not enter nearby waterways during construction, until the project is accepted. Provide siltation control and management measures in accordance with the approved Storm Water Pollution Prevention Plan (SWPPP).
- D. Deposit excavated soil not incorporated into the work in locations designated by site operator.

3.06 EARTHFILL CONSTRUCTION

- A. General Requirements:
 1. Earthfill materials shall be placed and compacted to the lines and grades shown on the Construction Drawings.
 2. If any portion of the materials placed as fill by the Contractor does not meet the specified requirements, then the Contractor shall remove such material and replace it with fill materials meeting the Specifications at no additional cost.
 3. Constructed fills shall be maintained to meet the requirements of this Specification until final completion and acceptance of the work. This shall include all measures to prevent erosion. During seasonal or other extended shutdowns, all exposed surfaces shall be protected with special treatments specified in Article 3.02 above.
- B. Placing Requirements:
 1. No material shall be placed on any portion of the subgrade or against or upon any structure until the Engineer has verified that this material meets these specifications.
 2. Place materials in conformance to the requirements of Table 31 20 00-2.
 3. Earthfill materials may require moisture conditioning (wetting or drying) prior to placement and compaction. Some materials may require spreading and extended drying time prior to placement and compaction. Moisture-conditioning requirements shall be as specified in Table 31 20 00-2.
 4. Contractor shall place earthfill materials in continuous and approximately 8" thick uniform lifts for their full length and width, unless otherwise specified or specifically permitted by the

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Engineer.

5. Method of dumping and spreading materials shall ensure uniform distribution of the material.
6. Loose thickness of each lift of materials shall be as specified in Table 31 20 00-2.
7. Unless otherwise indicated, earthfill materials shall be placed to a grade no flatter than 2 percent to facilitate drainage of water. In areas where ponding cannot be prevented or ponding has occurred and fill is required to be placed, placing shall begin only after the area is dewatered and permission is obtained from the Engineer.

C. Compaction Requirements:

1. Each lift of earthfill material shall be per Table 31 20 00-2.
2. During compaction, uniform moisture distribution shall be obtained by disking, blading, or other methods.
3. If the rolled surface of any in-place lift is too wet for proper compaction of the next succeeding lift to be placed thereon, then the materials from the in-place lift shall be removed and allowed to dry, or worked with harrow, scarifier, or other suitable equipment to reduce the water content, and then recompacted before the next succeeding lift is placed.
4. Fill compacted to densities lower than the specified minimum density, or fill compacted at moisture contents outside the specified acceptable range of moisture content shall be reworked to meet the density and moisture requirements or removed and replaced by acceptable fill compacted to meet these requirements.

3.07 COMPACTED CLAY LINER EARTHFILL CONSTRUCTION

- A. Comply with pertinent provisions of related sections and referenced specifications.
- B. Soil materials shall be scarified as shown on the Construction Drawings and processed if necessary to meet these specifications, moisture conditioned, and recompacted to the density and moisture requirements of Table 31 20 00-2.
- C. Prepared surfaces shall be inspected by the Engineer prior to placement of overlying vegetative layer soil. The Contractor shall request inspection by the Engineer.
- D. Tested and accepted compacted clay liner soil shall be covered immediately after placement with vegetative layer soil to prevent desiccation.

3.08 QUALITY ASSURANCE

- A. The Engineer will take samples and perform tests as indicated in Table 2200-1 throughout the construction period. The Contractor shall cooperate in providing access for testing and shall schedule his earthwork activities to avoid interference with testing. Verifying and documenting that the work is done in accordance with the Contract is of the essence.
- B. Additional tests may be performed at the Engineer's discretion.
- C. Placement tolerance shall be as specified in Table 31 20 00-1

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3.09 TOLERANCES

- A. All excavation and fill limits shall be constructed within a tolerance of ± 0.5 ft for horizontal state plan coordinates, and to the vertical tolerances in Table 31 20 00-2. All grading shall be performed to maintain slopes and drainage as shown on the Drawings.
- B. A Surveyor licensed in the State of California shall prepare record documentation to confirm that the tolerances are as required. The record documentation shall be reviewed by the CQA Engineer for approval prior to placement of each subsequent layers. As-built documentation is required for finished subgrade.

3.10 DUST CONTROL

- A. Implement dust control measures as required by Section 01500 – Temporary Controls.

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Table 31 20 00-1
Earthwork Material Evaluation Testing Frequency

ASTM Test Designation ¹	General Earthfill (CY)	Foundation Layer (CY)	Compacted Clay Liner (CY)
D2488-09a (Visual Soil Description)	10,000	10,000	10,000
D2487-11 (Soil Classification)	10,000	10,000	10,000
D1557-12 (Compaction)	10,000 (min 2 tests)	10,000 (min 2 tests)	10,000 (min 2 tests)
D6913 (2016) or C136 -06(Particle Size)	10,000	10,000	10,000
D1140-00(2006) (#200 Sieve Wash)	10,000	10,000	10,000
D4318-10 (Atterberg Limits)	10,000	10,000	10,000
ASTM D5084 (Hydraulic Conductivity)			10,000 (min 2 tests)
D2216-10 (Moisture Content)	10,000	10,000	10,000
ASTM D6938/17a In-Place Density & Moisture (Nuclear)	1,000	1,000	250

¹ Minimum one test per material type.

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Table 31 20 00-2
Fill Placement, Compaction, and Tolerances

Fill Type	Loose Lift Thickness (in.)	Moisture Content	Minimum Lift Density	Method of Test	Thickness Tolerance (ft)
CCL Preparation (Liner Side Slope)	8 Maximum	0 to 4% wet of optimum	90%	ASTM D1557-12	+ 0.1 - 0.0
Foundation Layer & General Earthfill	8 Maximum	±3% of optimum	90% ⁽²⁾	ASTM	+0.1
				D1557-12	- 0.1

¹ Maximum lift thickness.

² Unless otherwise stated on the Construction Drawings

END OF SECTION

DIVISION 31 EARTHWORK
SECTION 31 05 16
AGGREGATE BASE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for placement of aggregate base associated with the materials Storage Yard at The Buena Vista Landfill.

1.02 SUBMITTALS

- A. Submit gravel samples a minimum of 2 weeks prior to construction for testing by the CQA Engineer.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM), latest editions:
 - 1. ASTM D422 - Method for Particle Size Analysis of Soils.
 - 2. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb. Hammer and 18-in. Drop.
 - 3. ASTM D2419 - Test Method for Sand Equivalent Value of Soil/Fine Aggregate
 - 4. ASTM D2487 - Standard Test Method for Classification of Soils for Engineering Purposes.
 - 5. ASTM D2844 - Standard Test Method for Resistance R-Value and Expansion Pressure of Compacted Soils
 - 6. ASTM D2922 - Test Methods for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 7. ASTM D3744 - Aggregate Durability Index.
- B. State of California Department of Transportation (CALTRANS) Standard Specifications, latest edition.

1.04 TOLERANCES

- A. Aggregate base materials shall be placed to the extent and thicknesses shown on the Drawings.

PART 2 - PRODUCTS

2.01 1-1/2" CLASS II AGGREGATE

- A. Aggregate shall consist of sub-angular to angular gravel that is mechanically stable and chemically inert. In general, hard rock types such as basalt and granite are preferred; siltstones, mudstones, and carbonate rocks are not acceptable.

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AGGREGATE BASE

1. Material Storage Yard aggregate base course shall consist of material meeting the requirements of CALTRANS Standard Specification 26-1.02B for 1-1/2" maximum, Class II aggregate base. The aggregate gradation shall conform to the following:

US Sieve Size	Percent Passing
2"	100
1-1/2"	87-100
1"	-
3/4"	45-90
No. 4	20-50
No. 30	6-29
No. 200	0-12

PART 3 - EXECUTION

3.01 PLACEMENT OF 1-1/2" CLASS II AGGREGATE

- A. Place as base course over the completed final cover soils to the thickness shown on the Drawings.
- B. Subgrade preparation, spreading and compacting of the base course shall conform to requirements of Section 26 of the CALTRANS Standard Specifications.

- END OF SECTION -

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SECTION 31 05 19.13

GEOTEXTILE

CLASS 2 SURFACE IMPOUNDMENT LINER REHABILITATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the installation of the geotextile directly on top of the sump gravel as specified herein, as shown on the Construction Drawings and in the CQA plan for the Class 2 Surface Impoundment (Leachate Pond) Liner Rehabilitation Design.
- B. The Contractor shall be prepared to install the geotextile in conjunction with the earthwork and other liner components of the containment system.

1.02 RELATED SECTIONS

- A. Section 31 10 00 - Clearing, Grubbing and Stripping
- B. Section 31 20 00 - Earthwork
- C. Section 02231 - Geosynthetic Materials Anchor Trenches
- D. Section 31 23 13 - Subgrade Preparation
- E. Section 31 25 00 - Erosion and Sediment Controls
- F. Section 31 05 19.16 – Geomembranes
- G. Section 31 05 19.26 – Geocomposites
- H. Section 31 05 19.26 – Leak Detection System

1.03 REFERENCES

- A. Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design
- B. Latest version of the American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D570. Standard Test Method for Water Absorption of Plastics.
 - 2. ASTM D638. Standard Test Method for Tensile Properties of Plastics.
 - 3. ASTM D746. Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 - 4. ASTM D751. Standard Test Methods for Coated Fabrics.
 - 5. ASTM D792. Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement.

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6. ASTM D882. Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
7. ASTM D1004. Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
8. ASTM D1204. Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
9. ASTM D1238. Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
10. ASTM D1505. Standard Test Method for Density of Plastics by Density-Gradient Technique.
11. ASTM D1603. Standard Test Method for Carbon Black in Olefin Plastics.
12. ASTM D1693. Standard Test Method for Environmental Stress Cracking of Ethylene Plastics.
13. ASTM D4355. Standard Test Method for Measuring the Deterioration of Geotextiles Exposed to Xenon Arc Radiation (Ultraviolet Light), Moisture and Heat.
14. ASTM D4491. Standard Test Method for Measuring the Permittivity of Geotextiles.
15. ASTM D4533. Standard Test Method for Measuring the Trapezoidal Tearing Strength of Geotextiles.
16. ASTM D4632. Standard Test Method for Measuring the Grab Strength and Elongation of Geosynthetic Materials.
17. ASTM D4716. Standard Test Method for Measuring the Transmissivity of Geocomposite Drain Nets.
18. ASTM D4751. Standard Test Method for Measuring the Apparent Opening Size of Geotextiles.
19. ASTM D4833. Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
20. ASTM D5199. Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
21. ASTM D5261, Standard Test Method for Measuring the Mass Per Unit Area of Geotextiles
22. ASTM D5321. Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.

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23. ASTM D5397. Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
24. ASTM D5596. Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
25. ASTM D5994. Standard Test Method for Measuring Core Thickness of Textured Geomembranes.
26. ASTM D6241. Standard Test Method for Determining the Puncture Strength of Geotextiles.
27. ASTM D6392. Standard Test Method for Determining the Integrity of Nonreinforced Geomembranes Seams Produced Using Thermo-Fusion Methods
28. ASTM D7005. Standard Test Method for Measuring the Peel and Shear Strengths of the Geosynthetic Material (i.e., Geomembranes, Geotextiles, Geocomposites) Interfaces.

C. Geosynthetic Research Institute:

1. GRI-GM5. Seam Constant Tensile Load (SCTL) Test for Polyolefin Geomembrane Seams.

1.04 SUBMITTALS

- A. Prior to transporting any geotextile to the site, the Geotextile Manufacturer shall submit the following documentation on the material components used to manufacture the non-woven, needle punched, polyester or polypropylene, ultraviolet light (UV) stabilized geotextile.
 1. Origin (resin supplier's name, resin production plant) and identification (brand name, number) of the polyethylene resin to be used for this project.
 2. Copies of quality control certificates issued by the resin supplier including the production dates and origin of the resin used to manufacture the geotextile for the project.
 3. Results of tests conducted by the Manufacturer to verify the quality of the resin used to manufacture the geotextile rolls assigned to the project and the origin of the resin and quality control certificates issued by the resin supplier.
 4. Certification that no reclaimed polymer is added to the resin during the manufacturing of the geotextile to be used for this project. If recycled polymer is used, the Manufacturer shall submit a notarized certificate signed by the production manager documenting the quantity of recycled material, including a description of the procedure used to measure the quantity of recycled polymer.

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- B. The Geotextile Manufacturer shall submit the following documentation on geotextile roll production prior to the shipment of the geotextile rolls.
1. Manufacturing certificates for each shift's production of geotextile, signed by responsible parties employed by the Manufacturer (such as the production manager) and notarized.
 2. The quality control certificate shall include:
 - a. roll numbers and identification;
 - b. sampling procedures and
 - c. results of quality control tests, including descriptions of the test methods used.
 3. The Manufacturer quality control tests to be performed are outlined in Part 2.3 of this Section.
 4. The Manufacturer Warranty specified in Part 1.7.A of this Section.
 5. The Manufacturer shall submit a certificate stating that the geotextile is 100 percent free of needles that were used to needle punch the non-woven geotextile.
- C. Prior to mobilization of the Installer to the site, the Geosynthetic Installer shall submit the following information.
1. A drawing showing the installation layout identifying geotextile panel configurations, dimensions, details, locations of seams, as well as any variance or additional details which deviate from the Construction Drawings. The layout shall be adequate for use as a construction plan and shall include dimensions, details, etc. The layout drawings, as modified and/or approved by the CQA Consultant, shall become part of these specifications.
 2. Installation schedule.
 3. Copy of Installer's letter of approval or license by the Contractor.
 4. Installation capabilities, including:
 - a. information on equipment proposed for this project;
 - b. average daily production anticipated for this project and
 - c. quality control procedures.
 5. A list of completed facilities for which the installer has installed polyethylene geotextile. The following information shall be provided for each facility:
 - a. the name and purpose of the facility, its location and dates of installation;
 - b. the names of the Owner, General Contractor, Contractor and the name and phone number of a contact at the facility who can discuss the project;

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- c. thickness and surface area of installed geotextile and
 - d. type of seaming and type of seaming apparatus used.
6. Resume of the superintendent to be assigned to this project, including dates and duration of employment.
 7. Resumes of all personnel who will perform seaming operations on this project, including dates and duration of employment.
 8. The installation crew shall have the following experience.
 - a. The superintendent shall have supervised the installation of a minimum of 2,000,000 ft² of polyethylene geotextile.
 - b. At least one seamer shall have experience seaming a minimum of 100,000 lineal ft of polyethylene geotextile seams using the same type of seaming apparatus to be used at this site. Seamers with such experience will be designated "master seamers" and shall provide direct supervision over less experienced seamers.
 - c. All other seaming personnel shall have seamed at least 10,000 lineal ft of polyethylene geotextile seams using the same type of seaming apparatus to be used at this site. Personnel who have seamed less than 10,000 lineal ft of seams shall be allowed to seam only under the direct supervision of the master seamers or Superintendent.
 - D. A Certificate of Calibration less than 12 months old shall be submitted for the field tensiometer referenced in Part 3.5 of this Section prior to installation of any geotextile.
 - E. During installation, the Installer shall be responsible for the timely submission to the CQA Consultant of:
 1. Quality control documentation and
 2. Subgrade acceptance certificates, signed by the Installer, for each area to be covered by the geotextile.
 - F. Upon completion of the installation, the Geosynthetics Installer shall be responsible for the submission to the Owner of a warranty as specified in Part 1.7.B of this Section.

1.05 CONSTRUCTION QUALITY ASSURANCE

- A. The installation of the geotextile shall be monitored and tested by the CQA Consultant as outlined in the Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- B. The Contractor shall be aware of the activities in the CQA Plan and shall account for these CQA activities in the installation schedule.

1.06 QUALIFICATIONS

- A. Geotextile Manufacturer

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1. The Manufacturer shall be responsible to produce geotextile rolls from resin and shall have sufficient production capacity and qualified personnel to provide material meeting the requirements of this Section and the construction schedule for this project.

B. Geotextile Installer

1. The Installer shall be responsible for field handling, deploying, seaming, temporarily restraining (against wind) and other site aspects of the geotextiles and other components of the liner system. The Installer may also be responsible for anchoring systems and dewatering the area of installation including anchor trenches.

1.07 WARRANTY

- A. The Geotextile Manufacturer shall furnish the Owner a 20-year written warranty against defects in materials. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.
- B. The Geotextile Installer shall furnish the Owner with a 1-year written warranty against defects in workmanship. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.

PART 2 - PRODUCTS

2.01 GEOTEXTILE PROPERTIES

- A. The geotextile shall be manufactured from new, first-quality polyethylene resin. Reclaimed polymer shall not be added to the resin; however, the use of polymer recycled during the manufacturing process shall be permitted if performed with appropriate cleanliness and if the recycled polymer does not exceed 2% by weight of the total polymer weight. The material properties are summarized in Table 31 05 19.26 -1 and described below.
- B. The Geotextile component shall comply with the following specified properties:
 1. Polymer Composition: 95 percent by weight Polyester or Polypropylene.
 2. Mass Per Unit Area: minimum average 8 ounce per square yard (ASTM D5261).
 3. Apparent Opening Size: minimum average 0.21 millimeters (ASTM D4751).
 4. Permittivity: minimum average 0.60/second (ASTM D4491).
 5. Grab Strength: machine direction minimum average 200 pounds, machine cross direction minimum average 75 pounds (ASTM D4632).
 6. Puncture Resistance: minimum average 100 pounds (ASTM D4833).
 7. UV Resistance: minimum average 70 percent retained at 500 hours of exposure (ASTM D4355).

2.02 MANUFACTURING QUALITY CONTROL

A. Geotextile Resin:

1. The Geotextile Manufacturer shall sample and test the resin to demonstrate that the resin complies with the Specifications. The Contractor shall certify in writing that the resin does meet the Specifications and shall be held liable for any non-compliance.
2. Any geotextile manufactured from non-complying resin shall be rejected.
3. The Geotextile Manufacturer shall comply with the submittal requirements of this Section.

B. Rolls:

1. The Geotextile Manufacturer shall continuously monitor the geotextile during the manufacturing process for defects.
2. No geotextile shall be accepted which exhibits any defects.
3. No geotextile shall be accepted which fails to meet the specified thickness.
4. The Geotextile Manufacturer at a minimum shall sample and test the geotextile for the properties listed in Table 31 05 19.13-1 at a minimum frequency of one test specimen per 50,000 ft² produced to demonstrate that its properties conform to the values specified in Table 31 05 19.13-1.
5. Any geotextile sample that does not comply with the Specifications will result in rejection of the roll from which the sample was obtained and will not be used for this project.
6. If a geotextile sample fails to meet the quality control requirements of this Section, the Geotextile Manufacturer shall sample and test each roll manufactured, in the same resin batch, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established.
7. Additional testing may be performed at the Geotextile Manufacturer's discretion and expense, to isolate and more closely identify the non-complying rolls and/or to qualify individual rolls.
8. The Geotextile Manufacturer shall comply with the submittal requirements of Part 1.4 of this Section.

- C. The Geotextile Manufacturer shall permit the Owner's Representative to visit the manufacturing plant for project specific visits. If possible, such visits will be prior to or during the manufacturing of the geotextile rolls for the specific project.

2.03 LABELING

- A. Geotextile rolls shall be labeled with the following information.

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1. Name of Geotextile Manufacturer.
2. Length and width of the roll.
3. product identification.
4. lot number and
5. roll number.

2.04 TRANSPORTATION, HANDLING AND STORAGE

- A. Transportation of the geotextile shall be the responsibility of the Geotextile Manufacturer.
- B. Handling and care of the geotextiles prior to and following installation at the site shall be the responsibility of the Contractor and Geotextile Installer. The Contractor and Geotextile Installer shall be liable for all damage to the materials incurred prior to final acceptance of the containment system by the Owner.
- C. The Contractor and Geotextile Installer shall be responsible for storage of the geotextile at the site. The geotextile shall be protected from excessive heat or cold, dirt, puncture, cutting, or other damaging or deleterious conditions. Any additional storage procedures required by the County shall be the responsibility of the Contractor and Geotextile Installer.

PART 3 - EXECUTION

3.01 FAMILIARIZATION

- A. Prior to implementing any of the work described in this Section, the Contractor and Geosynthetics Installer shall become thoroughly familiar with all portions of the work falling within this Section.
- B. Inspection
 1. Prior to implementing any of the work in this Section, the Contractor shall carefully inspect the installed work of all other Sections and verify that all work is complete to the point where the work of this Section may properly commence without adverse impact.
 2. If the Geotextile Installer has any concerns regarding the installed work of other Sections, he shall notify the Owner and CQA Engineer in writing prior to the start of the work of this Section. Failure to inform the Owner and CQA Engineer in writing will be construed as Geotextile Installer's acceptance of the related work of all other Sections.
 3. If the Geotextile Installer intends to install geotextile between one hour before sunset and one hour after sunrise, he shall notify the Engineer and CQA Consultant in writing prior to the start of the work. The Geotextile Installer shall indicate additional precautions, which shall be taken during these installation hours. The Geotextile Installer shall provide adequate illumination for work during this time.

3.02 SURFACE PREPARATION

- A. The Installer shall provide certification in writing that the subgrade on which the geotextile will be installed is acceptable. This certification of acceptance shall be given to the CQA Consultant prior to commencement of geotextile installation in the area under consideration.
- B. Special care shall be taken to maintain the prepared soil ~~subgrade~~.
- C. No geotextile shall be placed onto an area which has been softened by precipitation or which has cracked due to desiccation. The soil surface shall be observed daily to evaluate the effects of desiccation cracking and/or softening on the integrity of the soil liner.
- D. Any damage to the soil surface caused by installation activities shall be repaired at the Installer's expense.

3.03 CONFORMANCE TESTING

- A. Samples of the geotextile will be removed by the CQA Consultant and sent to a geosynthetics CQA laboratory for testing to ensure conformance with the requirements of this Section. The Contractor shall account for this testing in the installation schedule. Only material which meets the requirements of this Section shall be installed.
- B. Samples will be selected by the CQA Consultant in accordance with this Section and with the procedures outlined in the CQA Plan.
- C. Samples will be taken at a minimum frequency of one sample per 100,000 ft² with a minimum of one sample per ~~kt~~
- D. The CQA Consultant may increase the frequency of sampling if test results do not comply with the requirements of this Section. The additional testing shall be performed at the expense of the Contractor.
- E. As a minimum, tests shall be performed by the CQA Consultant to verify the following minimum material properties of the geotextile by the appropriate ASTM test methods listed in Table 31 05 19.13-1:
 - 1. mass per unit area,
 - 2. apparent opening size,
 - 3. trapezoidal tear strength,
 - 4. grab strength,
 - 5. puncture resistance,
 - 6. ultraviolet (UV) light exposure,
 - 7. and permittivity.
- F. Any geotextiles that are not certified in accordance with this Section, or that conformance testing indicates do not comply with this Section, will be rejected by the CQA Consultant.

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The Contractor shall replace the rejected material with new material, at no additional cost to the Owner.

3.04 GEOTEXTILE DEPLOYMENT

A. Layout Drawings

1. The Geosynthetics Installer shall deploy the geotextile panel in general accordance with the submitted layout drawing. The layout drawing must be approved by the CQA Consultant prior to installation of any geotextile.

B. Field Panel Identification

1. A geotextile field panel is a roll, or a portion of roll cut in the field.
2. Each field panel shall be given an identification code (number or letter-number). This identification code shall be agreed upon by the CQA Consultant and Geosynthetics Installer.

C. Field Panel Placement

1. Field panels shall be installed as approved or modified at the location and positions indicated in the layout drawings.
2. Field panels shall be placed one at a time and each field panel shall be seamed immediately after its placement.
3. Geotextiles shall not be placed when the ambient temperature is below 40°F, unless otherwise authorized by the Engineer and the CQA Consultant.
4. Geotextiles shall not be placed during any precipitation, in the presence of excessive moisture (e.g., fog, dew), in an area of ponded water, or in the presence of excessive winds.
5. The Contractor shall ensure that the following conditions are met.
 - a. No vehicular traffic shall be allowed on the geotextile.
 - b. Equipment used shall not damage the geotextile by handling, trafficking, or leakage of hydrocarbons (i.e., fuels).
 - c. Personnel working on the geotextile shall not smoke, wear damaging shoes, bring glassware, or engage in other activities, which could damage the geotextile.
 - d. The method used to unroll the panels shall not scratch or crimp the geotextile and shall not damage the supporting soil.
 - e. The prepared surface underlying the geotextile shall not be allowed to deteriorate after acceptance and shall remain acceptable up to the time of geotextile placement.
 - f. The method used to place the panels shall minimize wrinkles (especially differential wrinkles between adjacent panels).

- g. Temporary ballast and/or anchors (e.g., sandbags), not likely to damage the geotextile, shall be placed on the geotextile to prevent uplift by wind.
 - h. The geotextile shall be especially protected from damage in heavily trafficked areas.
 - i. Any rub sheets to facilitate seaming shall be removed prior to installation of subsequent panels.
6. Any field panel or portion thereof, which becomes seriously damaged (i.e., torn, twisted, or crimped) shall be replaced with new material at no cost to the Owner. Less serious damage may be repaired at the CQA Consultant's option and at no cost to the Owner. Damaged panels or portions of damaged panels, which have been rejected shall be removed from the work area.

3.05 FIELD SEAMING

A. Seam Layout

1. In general, seams shall be oriented parallel to the line of maximum slope, (i.e., oriented down, not across, the slope). In corners and at odd-shaped geometric locations, the number of field seams shall be minimized. No horizontal seam shall be less than 5 ft (1.5 m) from the toe of the slope, except where approved by the CQA Consultant. No seams shall be in an area of potential stress concentration.

B. Personnel

1. All personnel performing seaming operations shall be qualified as indicated in Part 1.4 of this Section. No seaming shall be performed unless a "master seamer" is on-site.

C. Weather Conditions for Seaming

1. Unless authorized in writing by the Owner's Representative and the CQA Consultant, seaming shall not be attempted at ambient temperatures below 40°F or above 104°F. A meeting will be held with the Owner, Contractor, Engineer and CQA Consultant to establish acceptable installation procedures. In all cases, the geotextile shall be dry and protected from wind damage.
2. If the Geosynthetics Installer wishes to use methods, which may allow seaming at ambient temperatures below 40°F or above 104°F, he shall use a procedure approved by the Engineer and the CQA Consultant.
3. Ambient temperatures shall be measured between 0 to 6 inches above the geotextile surface.

D. Seam Panel Overlapping

1. Geotextile panels shall be overlapped a minimum of 4 inches for seaming.

E. Seam Preparation

1. Prior to seaming, the seam area shall be clean and free of moisture, dust, dirt, debris of any

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kind and foreign material.

2. Seams shall be aligned with the fewest possible number of wrinkles and "fishmouths."

F. General Seaming Requirements

1. Seaming shall extend to the outside edge of panels.
2. Fishmouths or wrinkles at the seam overlaps shall be cut along the ridge of the wrinkle to achieve a flat overlap. The cut fishmouths or wrinkles shall be seamed and any portion where the overlap is insufficient shall be patched with an oval or round patch of geotextile that extends a minimum of 6 inches beyond the cut in all directions.
3. Any electric generator shall be placed outside the area to be lined or mounted in a manner, which protects the geotextile damage. The electric generator shall be properly grounded.

G. Seaming Process

1. Approved processes for field seaming are sewing. Metallic materials such as wire ties are not allowed. Only equipment identified as part of the approved submittal specified in Part 1.4 shall be used. Proposed alternate processes shall be documented and submitted to the Owner's Representative for approval.
2. Seaming Procedures
 - a. Geotextile panel seams shall consist of minimum 6-inch overlaps between adjacent panels.
 - b. Each sewn seam shall extend for the entire length of the geotextile panel.
 - c. Polymeric thread, with chemical resistance properties equal to or exceeding those of the geotextile shall be used for sewing all geotextile seams.
 - d. The seams shall be sewn using Stich Type 401 or an approved equivalent or shall be Federal Standard Type SSa-1 or an approved equivalent.

H. Defects and Repairs:

1. The geotextile will be inspected before and after seaming for evidence of defects, holes, blisters, un-dispersed raw materials, and any sign of contamination by foreign matter. The surface of the geotextile shall be clean at the time of inspection. The geotextile surface shall be swept or washed by the Installer if surface contamination inhibits inspection. The Installer shall ensure that an inspection of the geotextile precedes any seaming of that section.
2. When seaming of a geotextile is completed (or when seaming of a large area of a geotextile is completed) and prior to placing overlying materials, the CQA Consultant shall identify all excessive geotextile wrinkles. The Installer shall cut, and re-seam all wrinkles so identified.

3. Repair Procedures:

- a. Any portion of the geotextile exhibiting a flaw shall be repaired by the Geosynthetics Installer. Several repair procedures exist. The final decision as to the appropriate repair procedure shall be agreed upon between the CQA Consultant and the Geosynthetics Installer. The procedures available include:
 - i. patching, used to repair large holes (and panel tee sections), tears, un- dispersed raw materials and contamination by foreign matter;
 - ii. spot seaming, used to repair minor, localized flaws; and
 - iii. topping, used to repair areas of inadequate seams, which have an exposed edge less than 4 inches in length
- b. In addition, the following shall be satisfied:
 - i. all surfaces must be clean and dry at the time of repair.
 - ii. all seaming equipment used in repair procedures must be approved;
 - iii. the repair procedures, materials and techniques shall be approved in advance, for the specific repair, by the CQA Consultant; and
 - iv. patches or caps shall extend at least 6 inches beyond the edge of the defect and all corners of patches shall be rounded with a radius of at least 3 inches.

4. Repair Verification:

- a. Each repair shall be observed by the CQA Consultant.

3.06 MATERIALS IN CONTACT WITH THE GEOTEXTILE

- A. The Contractor shall take all necessary precautions to ensure that the geotextile is not damaged during its installation or during the installation of other components of the containment system or by other construction activities.
- B. Granular materials shall not be placed on the geotextiles at ambient temperatures below 40°F or above 104°F. Unless otherwise noted, the maximum allowable height for a wrinkle shall be 2 inches.
- C. Equipment shall not be driven directly on the geotextile nor on top of the gravel sump material due to the thinness of the installed gravel sump materials (i.e., less than or equal to 6-inches thick).
- D. Appurtenances:
 1. Appurtenances through the geotextile will not be allowed.

3.07 GEOTEXTILE ACCEPTANCE

- A. The Geotextile Installer shall retain all ownership and responsibility for the geotextile until accepted by the Owner.
- B. The geotextile shall be accepted by the Owner ~~when~~

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1. the installation is completed.
2. all documentation is submitted;
3. verification of the adequacy of all field seams and repairs are completes.
4. all warranties are submitted and
5. written certification documents, including record drawings, sealed by the CQA Consultants' Engineer-of-Record have been received by the Owner.

3.08 **PRODUCT PROTECTION**

- A. The Geotextile Installer shall use all means necessary to protect all prior work and all materials and completed work of other Sections.
- B. In the event of damage, the Geotextile Installer shall make all repairs and replacements necessary to the approval of the CQA Consultants and at no additional cost to the Owner.

Table 31 05 19.13 -1

MINIMUM GEOTEXTILE PROPERTY TEST VALUES

Properties	Test Method	Manufacturer QC Test Frequency	Conformance QA Test Frequency	Required Test Values
Polymer Composition	Not Applicable	1 per 50,000 sf ⁽¹⁾	Not Applicable	95% Polyester or Polypropylene (% by weight) ⁽²⁾
Mass Per Unit Area			1 per 100,000 sf	Min Avg 8 oz/sy ⁽³⁾
Apparent Opening Size	ASTM D5261	1 per 50,000 sf		Min Avg 0.21 mm ⁽⁴⁾
Permittivity	ASTM D4751	1 per 50,000 sf	1 per 100,000 sf	Min Avg 0.60/second
Trapezoidal Tear Strength	ASTM D4491	1 per 50,000 sf		Min Avg 75 pounds
Grab Strength	ASTM D4533	1 per 50,000 sf	1 per 100,000 sf	
Machine Direction	ASTM D4632	1 per 50,000 sf		Min Avg 200 pounds
Cross Direction			1 per 100,000 sf	Min Avg 75 pounds
Puncture Strength				Min Avg 100 pounds
UV Resistance	ASTM D4833	1 per 50,000 sf	1 per 100,000 sf	70 % Retained
	ASTM D4355	1 per 50,000 sf		
			1 per 100,000 sf	
			Not Applicable	
Notes:				
(1) sf = square feet.				
(2) % = percent.				
(3) oz/sy = ounces per square yard.				
(4) mm = millimeters.				

SECTION 31 05 19.16
GEOMEMBRANES
CLASS 2 LEACHATE POND LINER REHABILITATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials, tools, supervision, transportation and installation equipment necessary for the installation of the 60-mil double-sided textured HDPE geomembrane directly on top of the existing Hypalon geomembrane and new engineered fill berm soil as specified herein, as shown on the Construction Drawings and in the CQA plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- B. The Contractor shall be prepared to install the HDPE geomembrane in conjunction with the earthwork and other components of the containment system.

1.02 RELATED SECTIONS

- A. Section 31 10 00 - Clearing, Grubbing and Stripping
- B. Section 31 20 00 - Earthwork
- C. Section 31 25 00 - Erosion and Sediment Controls
- D. Section 31 23 33 - Geosynthetic Materials Anchor Trenches
- E. Section 31 23 13 – Liner Subgrade Preparation

1.03 REFERENCES

- A. Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design
- B. Latest version of the American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D570. Standard Test Method for Water Absorption of Plastics.
 - 2. ASTM D638. Standard Test Method for Tensile Properties of Plastics.
 - 3. ASTM D746. Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 - 4. ASTM D751. Standard Test Methods for Coated Fabrics.
 - 5. ASTM D792. Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement.
 - 6. ASTM D882. Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - 7. ASTM D1004. Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.

8. ASTM D1204. Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
9. ASTM D1238. Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
10. ASTM D1505. Standard Test Method for Density of Plastics by Density-Gradient Technique.
11. ASTM D1603. Standard Test Method for Carbon Black in Olefin Plastics.
12. ASTM D1693. Standard Test Method for Environmental Stress Cracking of Ethylene Plastics.
13. ASTM D4833. Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
14. ASTM D5199. Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
15. ASTM D5321. Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.
16. ASTM D5397. Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
17. ASTM D5596. Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
18. ASTM D5994. Standard Test Method for Measuring Core Thickness of Textured Geomembrane
19. ASTM D6392. Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

C. Geosynthetic Research Institute:

1. GRI-GM5. Seam Constant Tensile Load (SCTL) Test for Polyolefin Geomembrane Seams.

1.04 SUBMITTALS

- A. Prior to transporting any geomembrane to the site, the Geomembrane Manufacturer shall submit the following documentation on the resin used to manufacture the geomembranes.
 1. Origin (resin supplier's name, resin production plant) and identification (brand name, number) of the polyethylene resin to be used for this project.

2. Copies of quality control certificates issued by the resin supplier including the production dates and origin of the resin used to manufacture the geomembrane for the project.
 3. Results of tests conducted by the Manufacturer to verify the quality of the resin used to manufacture the geomembrane rolls assigned to the project and the origin of the resin and quality control certificates issued by the resin supplier.
 4. Certification that no reclaimed polymer is added to the resin during the manufacturing of the geomembrane to be used for this project. If recycled polymer is used, the Manufacturer shall submit a notarized certificate signed by the production manager documenting the quantity of recycled material, including a description of the procedure used to measure the quantity of recycled polymer.
- B. The Geomembrane Manufacturer shall submit the following documentation on geomembrane roll production prior to the shipment of the geomembrane rolls.
1. Manufacturing certificates for each shift's production of geomembrane, signed by responsible parties employed by the Manufacturer (such as the production manager) and notarized.
 2. The quality control certificate shall include:
 - a. roll numbers and identification;
 - b. sampling procedures and
 - c. results of quality control tests, including descriptions of the test methods used.
 3. The Manufacturer quality control tests to be performed are outlined in Part 2.3 of this Section.
 4. The Manufacturer Warranty specified in Part 1.7.A of this Section.
- C. Prior to mobilization of the Installer to the site, the Geosynthetic Installer shall submit the following information.
1. A drawing showing the installation layout identifying geomembrane panel configurations, dimensions, details, locations of seams, as well as any variance or additional details which deviate from the Construction Drawings. The layout shall be adequate for use as a construction plan and shall include dimensions, details, etc. The layout drawings, as modified and/or approved by the CQA Consultant, shall become part of these specifications.
 2. Installation schedule.
 3. Copy of Installer's letter of approval or license by the Contractor.
 4. Installation capabilities, including:

- a. information on equipment proposed for this project;
 - b. average daily production anticipated for this project and
 - c. quality control procedures.
5. A list of completed facilities for which the installer has installed polyethylene geomembrane. The following information shall be provided for each facility:
- a. the name and purpose of the facility, its location and dates of installation;
 - b. the names of the Owner, General Contractor, Contractor and the name and phone number of a contact at the facility who can discuss the project;
 - c. thickness and surface area of installed geomembrane and
 - d. type of seaming and type of seaming apparatus used.
6. Resume of the superintendent to be assigned to this project, including dates and duration of employment.
7. Resumes of all personnel who will perform seaming operations on this project, including dates and duration of employment.
8. The installation crew shall have the following experience.
- a. The superintendent shall have supervised the installation of a minimum of 2,000,000 ft² of polyethylene geomembrane.
 - b. At least one seamer shall have experience seaming a minimum of 100,000 lineal ft of polyethylene geomembrane seams using the same type of seaming apparatus to be used at this site. Seamers with such experience will be designated "master seamers" and shall provide direct supervision over less experienced seamers.
 - c. All other seaming personnel shall have seamed at least 10,000 lineal ft of polyethylene geomembrane seams using the same type of seaming apparatus to be used at this site. Personnel who have seamed less than 10,000 lineal ft of seams shall be allowed to seam only under the direct supervision of the master seamers or Superintendent.
- D. A Certificate of Calibration less than 12 months old shall be submitted for the field tensiometer referenced in Part 3.5 of this Section prior to installation of any geomembrane.
- E. During installation, the Installer shall be responsible for the timely submission to the CQA Consultant of:
1. Quality control documentation and
 2. Subgrade acceptance certificates, signed by the Installer, for each area to be covered by the geomembrane.
- F. Upon completion of the installation, the Geosynthetics Installer shall be responsible for the submission to the Owner of a warranty as specified in Part 1.7.B of this Section.

1.05 CONSTRUCTION QUALITY ASSURANCE

- A. The installation of the geomembrane shall be monitored and tested by the CQA Consultant as outlined in the Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- B. The Contractor shall be aware of the activities in the CQA Plan and shall account for these CQA activities in the installation schedule.

1.06 QUALIFICATIONS

- A. Geomembrane Manufacturer
 - 1. The Manufacturer shall be responsible to produce geomembrane rolls from resin and shall have sufficient production capacity and qualified personnel to provide material meeting the requirements of this Section and the construction schedule for this project.
- B. Geomembrane Installer
 - 1. The Installer shall be responsible for field handling, deploying, seaming, temporarily restraining (against wind) and other site aspects of the geomembranes and other components of the liner system. The Installer may also be responsible for anchoring systems and dewatering the area of installation including anchor trenches.

1.07 WARRANTY

- A. The Geomembrane Manufacturer shall furnish the Owner a 20-year written warranty against defects in materials. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.
- B. The Geomembrane Installer shall furnish the Owner with a 1-year written warranty against defects in workmanship. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.

PART 2 - PART 2 PRODUCTS

2.01 RESIN

- A. The geomembrane shall be manufactured from new, first-quality polyethylene resin. Reclaimed polymer shall not be added to the resin; however, the use of polymer recycled during the manufacturing process shall be permitted if performed with appropriate cleanliness and if the recycled polymer does not exceed 2% by weight of the total polymer weight.
- B. The resin shall comply with the following high-density polyethylene (HDPE) specified properties:
 - 1. Specific Gravity: 0.935 to 0.950 g/cm³ (ASTM D 792 Method A, or
ASTM D 1505)
 - 2. Melt Index: 1.0 g/10 min., maximum (ASTM D 1238 Condition E,
190°C, 2.16 kg)

2.02 GEOMEMBRANE PROPERTIES

- A. The Contractor shall furnish geomembrane having properties that comply with the required property values shown in Table 31 05 19.16-1.
- B. In addition to the property values listed in Table 31 05 19.16-1, the geomembranes shall:
 - 1. Contain a maximum of 1% by weight of additives, fillers, or extenders (not including carbon black).
 - 2. Not have striations, pinholes (holes), bubbles, blisters, nodules, undispersed raw materials, or any sign of contamination by foreign matter on the surface or in the interior.

2.03 MANUFACTURING QUALITY CONTROL

- A. Resin:

1. The Geomembrane Manufacturer shall sample and test the resin to demonstrate that the resin complies with the Specifications. The Contractor shall certify in writing that the resin does meet the Specifications and shall be held liable for any non-compliance.
2. Any geomembrane manufactured from non-complying resin shall be rejected.
3. The Geomembrane Manufacturer shall comply with the submittal requirements of this Section.

B. Rolls:

1. The Geomembrane Manufacturer shall continuously monitor the geomembrane during the manufacturing process for defects.
2. No geomembrane shall be accepted which exhibits any defects.
3. The Geomembrane Manufacturer shall measure the geomembrane thickness at regular intervals along the roll length.
4. No geomembrane shall be accepted which fails to meet the specified thickness.
5. The Geomembrane Manufacturer shall sample and test the geomembrane, at a minimum, once every 50,000 ft² to demonstrate that its properties conform to the values specified in Table 31 05 19.16-1. As a minimum, the following tests shall be performed:

TEST	PROCEDURE
Specific gravity	ASTM D 792 Method A or ASTM D 1505
Thickness	ASTM D 5199 (Nominal, Smooth) ASTM D 5994 (Core, Textured)
Yield strength	ASTM D 638
Yield elongation	ASTM D 638
Break strength	ASTM D 638
Break elongation	ASTM D 638
Carbon black	ASTM D 1603
Carbon black dispersion	ASTM D 5596

6. Any geomembrane sample that does not comply with the Specifications will result in rejection of the roll from which the sample was obtained and will not be used for this project.
7. If a geomembrane sample fails to meet the quality control requirements of this Section, the Geomembrane Manufacturer shall sample and test each roll manufactured, in the same resin batch, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established.
8. Additional testing may be performed at the Geomembrane Manufacturer's discretion and expense, to isolate and more closely identify the non-complying rolls and/or to qualify individual rolls.
9. The following tests need not be run at the 1 per 50,000 ft² frequency but should be certified by the manufacturer.

TEST	PROCEDURE
Environmental stress crack	ASTM D 5397 (as modified by GRI-GM5B)
Low temperature brittleness	ASTM D 746

10. The Geomembrane Manufacturer shall comply with the submittal requirements of Part 1.4

- C. The Geomembrane Manufacturer shall permit the Owner's Representative to visit the manufacturing plant for project specific visits. If possible, such visits will be prior to or during the manufacturing of the geomembrane rolls for the specific project.

2.04 LABELING

- A. Geomembrane rolls shall be labeled with the following information.

1. thickness of the material;
2. length and width of the roll;
3. name of Geomembrane Manufacturer;
4. product identification;
5. lot number and
6. roll number.

2.05 TRANSPORTATION, HANDLING AND STORAGE

- A. Transportation of the geomembrane shall be the responsibility of the Geomembrane Manufacturer.
- B. Handling and care of the geomembranes prior to and following installation at the site shall be the responsibility of the Geomembrane Installer. The Geomembrane Installer shall be liable for all damage to the materials incurred prior to final acceptance of the containment system by the Owner.
- C. The Geomembrane Installer shall be responsible for storage of the geomembrane at the site.

The geomembrane shall be protected from excessive heat or cold, dirt, puncture, cutting, or other damaging or deleterious conditions. Any additional storage procedures required by the Contractor shall be the Installer's responsibility.

PART 3 - PART 3 EXECUTION

3.01 FAMILIARIZATION

- A. Prior to implementing any of the work described in this Section, the Contractor and Geosynthetics Installer shall become thoroughly familiar with all portions of the work falling within this Section.

- B. Inspection
 - 1. Prior to implementing any of the work in this Section, the Contractor shall carefully inspect the installed work of all other Sections and verify that all work is complete to the point where the work of this Section may properly commence without adverse impact.
 - 2. If the Geomembrane Installer has any concerns regarding the installed work of other Sections, he shall notify the Owner in writing prior to the start of the work of this Section. Failure to inform the Owner in writing will be construed as Geomembrane Installer's acceptance of the related work of all other Sections.
 - 3. If the Geomembrane Installer intends to install geomembrane between one hour before sunset and one hour after sunrise, he shall notify the Engineer and CQA Consultant in writing prior to the start of the work. The Geomembrane Installer shall indicate additional precautions, which shall be taken during these installation hours. The Geomembrane Installer shall provide adequate illumination for work during this time.

3.02 SURFACE PREPARATION

- A. The Installer shall provide certification in writing that the subgrade on which the geomembrane will be installed is acceptable. This certification of acceptance shall be given to the CQA Consultant prior to commencement of geomembrane installation in the area under consideration.

- B. Special care shall be taken to maintain the prepared soil subgrade.

- C. No geomembrane shall be placed onto an area which has been softened by precipitation or which has cracked due to desiccation. The soil surface shall be observed daily to evaluate the effects of desiccation cracking and/or softening on the integrity of the soil liner.

- D. Any damage to the soil surface caused by installation activities shall be repaired at the Installer's expense.

3.03 CONFORMANCE TESTING

- A. Samples of the geomembrane will be removed by the CQA Consultant and sent to a geosynthetics CQA laboratory for testing to ensure conformance with the requirements of this Section. The Contractor shall account for this testing in the installation schedule. Only material which meets the requirements of this Section shall be installed.

- B. Samples will be selected by the CQA Consultant in accordance with this Section and with the procedures outlined in the CQA Plan.

- C. Samples will be taken at a minimum frequency of one sample per 100,000 ft² with a minimum of one sample per lot.

- D. The CQA Consultant may increase the frequency of sampling if test results do not comply with the requirements of this Section. The additional testing shall be performed at the expense of the Contractor.

- E. As a minimum, tests shall be performed by the CQA Consultant to establish the thickness, specific gravity, tensile properties, carbon black content and carbon black dispersion of the geomembrane. The appropriate test methods are summarized in Table 31 05 19.16-1.

- F. Any geomembranes that are not certified in accordance with this Section, or that conformance testing indicates do not comply with this Section, will be rejected by the CQA Consultant. The Contractor shall replace the rejected material with new material, at no additional cost to the Owner.

3.04 GEOMEMBRANE DEPLOYMENT

- A. Layout Drawings

1. The Geosynthetics Installer shall deploy the geomembrane panel in general accordance with the submitted layout drawing. The layout drawing must be approved by the CQA Consultant prior to installation of any geomembrane.

B. Field Panel Identification

1. A geomembrane field panel is a roll or a portion of roll cut in the field.
2. Each field panel shall be given an identification code (number or letter-number). This identification code shall be agreed upon by the CQA Consultant and Geosynthetics Installer.

C. Field Panel Placement

1. Field panels shall be installed as approved or modified at the location and positions indicated in the layout drawings.
2. Field panels shall be placed one at a time and each field panel shall be seamed immediately after its placement.
3. Geomembranes shall not be placed when the ambient temperature is below 40°F, unless otherwise authorized by the Engineer and the CQA Consultant.
4. Geomembranes shall not be placed during any precipitation, in the presence of excessive moisture (e.g., fog, dew), in an area of ponded water, or in the presence of excessive winds.
5. The Contractor shall ensure that the following conditions are met.
 - i. No vehicular traffic shall be allowed on the geomembrane.
 - ii. Equipment used shall not damage the geomembrane by handling, trafficking, or leakage of hydrocarbons (i.e., fuels).
 - iii. Personnel working on the geomembrane shall not smoke, wear damaging shoes, bring

- glassware, or engage in other activities, which could damage the geomembrane.
- iv. The method used to unroll the panels shall not scratch or crimp the geomembrane and shall not damage the supporting soil.
 - v. The prepared surface underlying the geomembrane shall not be allowed to deteriorate after acceptance and shall remain acceptable up to the time of geomembrane placement.
 - vi. The method used to place the panels shall minimize wrinkles (especially differential wrinkles between adjacent panels).
 - vii. Temporary ballast and/or anchors (e.g., sandbags), not likely to damage the geomembrane, shall be placed on the geomembrane to prevent uplift by wind.
 - viii. The geomembrane shall be especially protected from damage in heavily trafficked areas.
 - ix. Any rub sheets to facilitate seaming shall be removed prior to installation of subsequent panels.
6. Any field panel or portion thereof, which becomes seriously damaged (i.e., torn, twisted, or crimped) shall be replaced with new material at no cost to the Owner. Less serious damage may be repaired at the CQA Consultant's option and at no cost to the Owner. Damaged panels or portions of damaged panels, which have been rejected shall be removed from the work area.

3.05 FIELD SEAMING

A. Seam Layout

1. In general, seams shall be oriented parallel to the line of maximum slope, (i.e., oriented down, not across, the slope). In corners and at odd-shaped geometric locations, the number of field seams shall be minimized. No horizontal seam shall be less than 5 ft (1.5 m) from the toe of the slope, except where approved by the CQA Consultant. No seams shall be in an area of potential stress concentration.

B. Personnel

1. All personnel performing seaming operations shall be qualified as indicated in Part 1.4 of this Section. No seaming shall be performed unless a "master seamer" is on-site.

C. Weather Conditions for Seaming

1. Unless authorized in writing by the Owner's Representative and the CQA Consultant, seaming shall not be attempted at ambient temperatures below 40°F or above 104°F. A meeting will be held with the Owner, Contractor, Engineer and CQA Consultant to establish acceptable installation procedures. In all cases, the geomembrane shall be dry and protected from wind damage.
2. If the Geosynthetics Installer wishes to use methods, which may allow seaming at ambient temperatures below 40°F or above 104°F, he shall use a procedure approved by the Engineer and the CQA Consultant.
3. Ambient temperatures shall be measured between 0 to 6 inches above the geomembrane surface.

D. Overlapping and Temporary Bonding

1. Geomembrane panels shall be sufficiently overlapped for welding and to allow peel tests to be performed on the seam. Any seams, which cannot be destructively tested because of insufficient overlap shall be treated as failing seams.
2. The procedure used to temporarily heat bond adjacent panels together shall not damage the geomembrane. The temperature of the air at the nozzle of heat bonding apparatus shall be controlled such that the geomembrane is not damaged.

E. Seam Preparation

1. Prior to seaming, the seam area shall be clean and free of moisture, dust, dirt, debris of any kind and foreign material.
2. If seam overlap grinding is required, the process shall be completed according to the Contractor's instructions within 20 minutes of the seaming operation and in a manner that does not damage the geomembrane. The grind depth shall not exceed ten percent of the geomembrane thickness. Grinding marks shall not appear beyond 0.25 inches of the extrudate after it is placed.

3. Seams shall be aligned with the fewest possible number of wrinkles and "fishmouths."

F. General Seaming Requirements

1. Seaming shall extend to the outside edge of panels to be placed in the anchor trench.
2. If required, a firm substrate such a flat board or similar hard surface may be placed directly under the seam overlap to achieve proper support.
3. Fishmouths or wrinkles at the seam overlaps shall be cut along the ridge of the wrinkle to achieve a flat overlap. The cut fishmouths or wrinkles shall be seamed and any portion where the overlap is insufficient shall be patched with an oval or round patch of geomembrane that extends a minimum of 6 inches beyond the cut in all directions.
4. Any electric generator shall be placed outside the area to be lined or mounted in a manner, which protects the geomembrane damage. The electric generator shall be properly grounded.

G. Seaming Process

1. Approved processes for field seaming are extrusion welding and fusion welding. Seaming equipment shall not damage the geomembrane. Only equipment identified as part of the approved submittal specified in Part 1.4 shall be used. Proposed alternate processes shall be documented and submitted to the Owner's Representative for approval.
2. Extrusion Equipment and Procedures
 - a. The Geosynthetics Installer shall maintain at least one spare operable seaming apparatus on site.
 - b. Extrusion welding apparatus shall be equipped with gauges giving the temperature in the apparatus and at the nozzle.
 - c. Prior to beginning a seam, the extruder shall be purged until all heat- degraded extrudate has been removed from the barrel. Whenever the extruder is stopped, the

barrel shall be purged of all heat-degraded extrudate.

- d. The Geosynthetics Installer shall provide documentation regarding the welding rod or resin to the CQA Consultant and shall certify that the welding rod or resin is compatible with the specifications and consists of the same resin as the geomembrane.

3. Fusion Equipment and Procedures

- a. The Geosynthetics Installer shall maintain at least one spare operable seaming apparatus on site.
- b. Fusion-welding apparatus shall be automated vehicular-mounted devices equipped with gauges giving the applicable temperatures and pressures.
- c. The edges of cross seams shall be abraded to a smooth incline (top and bottom) prior to extrusion welding.
- d. A movable protective layer may be used directly below each geomembrane overlap to be seamed to prevent the buildup of moisture between the sheets.

H. Trial Seams

1. Trial seams shall be made on fragment pieces of geomembrane to verify that seaming conditions are adequate. Trial seams must be conducted on the same material to be installed and under similar field conditions as production seams. Such trial seams shall be made at the beginning of each seaming period and at least once each five hours, for each seaming apparatus used that day. Also, each seamer shall make at least one trial seam each day. Trial seams shall be made under the same conditions as actual seams. The trial seam sample shall be a minimum of 15 feet long by 1 foot wide (after seaming) with the seam centered lengthwise for fusion equipment and at least 3 feet long by 1 foot wide for extrusion equipment. Seam overlap shall be as indicated in Part 3.5.D of this Section.
2. Four specimens, each 1 inch wide, shall be cut from the trial seam sample by the Geosynthetics Installer. Two specimens shall be tested in shear and two in peel (inside and outside tracks for double fusion welds), using a tensiometer. The test specimens shall not fail in the seam. If a specimen fails, the entire operation shall be repeated. If the additional specimen fails, the seaming apparatus or seamer shall not be accepted and shall not be used for seaming until the deficiencies are corrected and two consecutive successful trial seams

are achieved. A seamer may start production seaming prior to testing of the trial seams. In the event the trial seam fails, all production seams will be treated as failed seams and repaired in accordance with Part 3.5.K this Section.

I. Nondestructive Seam Continuity Testing

1. The Installer shall nondestructively test for continuity on all field seams over their full length. Continuity testing shall be carried out as the seaming work progresses, not at the completion of all field seaming. The Installer shall complete any required repairs in accordance with Part 3.5.K of this Section. The following procedures shall apply.

- a. Vacuum testing shall be used for extrusion welds.
- b. Air pressure testing shall be used for double fusion seams.
- c. Spark testing shall be performed if the seam cannot be tested using other nondestructive methods.

2. Vacuum Testing

- a. The equipment shall comprise the following:
 - i. A vacuum box assembly consisting of a stiff housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole or valve assembly and a vacuum gauge.
 - ii. A system for applying 5 psi gauge to the box.
 - iii. A bucket of soapy solution and applicator.
- b. The following procedures shall be followed:
 - i. Energize the vacuum pump and reduce the tank pressure to approximately 5 psi absolute gauge.
 - ii. Wet an area of the geomembrane seam larger than the vacuum box with the soapy solution.

- iii. Place the box over the wetted area.
- iv. Close the bleed valve and open the vacuum valve.
- v. Ensure that a leak tight seal is created.
- vi. Examine the geomembrane through the viewing window for the presence of soap bubbles for not less than 30 seconds.
- vii. If no bubbles appear after 30 seconds, close the vacuum valve and open the bleed valve, move the box over the next adjoining area with a minimum 3 inch overlap and repeat the process.
- viii. All areas where soap bubbles appear shall be marked with a marker that will not damage the geomembrane and be repaired in accordance with Part 3.5.K of this Section.

3. Air Pressure Testing (For Double Fusion Seams Only)

- a. The following procedures are applicable to those processes, which produce a double seam with an enclosed space.
- b. The equipment shall comprise the following:
 - i. An air pump (manual or motor driven) or air reservoir, equipped with a pressure gauge, capable of generating and sustaining a pressure between 25 and 30 psi, mounted on a cushion to protect the geomembrane.
 - ii. A rubber hose with fittings and connections.
 - iii. A hollow needle, or other approved pressure feed device.
- c. The following procedures shall be followed:
 - i. Seal both ends of the seam to be tested.

- ii. Insert needle, or other approved pressure feed device, into the tunnel created by the fusion weld.
- iii. Insert a protective cushion between the air pump and the geomembrane.
- iv. Energize the air pump to a pressure between 25 and 30 psi, close valve and sustain the pressure for not less than 5 minutes.
- v. If loss of pressure exceeds 3 psi, or does not stabilize, locate faulty area and repair in accordance with Part 3.5.K of this Section.
- vi. Cut opposite end of air channel from pressure gauge and observe release of pressure to ensure air channel is not blocked.
- vii. Remove needle, or other approved pressure feed device and seal repair in accordance with Part 3.5.K of this Section.

J. Destructive Testing

1. Destructive seam tests shall be performed on samples collected from selected locations to evaluate seam strength and integrity. Destructive test sampling and testing shall be carried out as the seaming work progresses, not at the completion of all field seaming.

2. Sampling

- a. Destructive test samples shall be collected at a minimum average frequency of one test location per 500 feet of seam length. Test locations shall be determined during seaming and may be prompted by suspicion of excess crystallinity, contamination, offset seams, or any other potential cause of imperfect seaming. The CQA Consultant will be responsible for choosing the locations. The Contractor shall not be informed in advance of the locations where the seam samples will be taken. The Owner or CQA Consultant reserves the right to increase the sampling frequency.
- b. Samples shall be cut by the Installer at the locations designated by the CQA Consultant as the seaming progresses to obtain laboratory test results before the geomembrane is covered by another material. Each sample shall be numbered and the sample number and location identified on the panel layout drawing. All holes in the geomembrane resulting from the destructive seam sampling shall be immediately repaired in accordance with the repair procedures described in Part 3.5.K of this Section. The continuity of the new seams in the repaired areas shall be tested

according to Part 3.5.I of this Section.

- c. Two strips 1 inch wide and 12 inches long with the seam centered parallel to the width shall be taken from either side of the sample location. These samples shall be tested in the field in accordance with Part 3.5.J of this Section. If these samples pass the field test, a laboratory sample shall be taken. The laboratory sample shall be at least 1 foot wide by 3.5 feet long with the seam centered lengthwise. The sample shall be cut into three parts and distributed as follows:
 - i. One portion 1 foot long to the Installer.
 - ii. One portion 1.5 feet long to the Geosynthetic CQA Laboratory for testing.
 - iii. One portion 1 foot long to the Owner for archival storage.

3. Field Testing:

- a. The two 1 inch wide strips shall be tested in the tensiometer in the peel mode. Both inside and outside tracks shall be tested for double track fusion welds. The CQA Consultant has the option to request an additional test in the shear mode. If any field test sample fails to meet the requirements in Table 31 05 19.16-02, then the procedures outlined in Part 3.5.J of this Section shall be followed.

4. Laboratory Testing:

- b. Testing by the Geosynthetics CQA Laboratory will include "Shear Strength" and "Peel Adhesion" (ASTM D 6392) with 1 inch wide strip, tested at a rate of 2 inches per minute. The minimum acceptable values to be obtained in these tests are those indicated in Table 31 05 19.16-2. At least 5 specimens will be tested for each test method. Specimens will be selected alternately by test from the samples (i.e., peel, shear, peel, shear). Both inside and outside welds shall be tested for double track fusion welds.

5. Destructive Test Failure:

- a. The following procedures shall apply whenever a sample fails a destructive test, whether the test is conducted by the Owner's laboratory, the Geosynthetics Installer laboratory, or by a field tensiometer. The Geosynthetics Installer shall have two options:

- iv. The Geosynthetics Installer can reconstruct the seam (e.g., remove the old seam and re-seam) between any two passed test locations.
 - v. The Geosynthetics Installer can trace the welding path to an intermediate location, a minimum of 10 feet from the location of the failed test (in each direction) and take a small sample for an additional field test at each location. If these additional samples pass the tests, then full laboratory samples shall be taken. These full laboratory samples shall be tested in accordance with Part 3.5.J of this Section. If these laboratory samples pass the tests, then the seam shall be reconstructed between these locations. If either sample fails, then the process shall be repeated to establish the zone in which the seam should be reconstructed. In any case, all acceptable seams must be bounded by two locations from which samples passing laboratory destructive tests have been taken. In cases exceeding 150 feet of reconstructed seam, a sample taken from within the reconstructed zone must pass destructive testing.
- b. Whenever a sample fails, the CQA Consultant may require additional tests for seams that were formed by the same seamer and/or seaming apparatus or seamed during the same time shift.

K. Defects and Repairs:

1. The geomembrane will be inspected before and after seaming for evidence of defects, holes, blisters, un-dispersed raw materials and any sign of contamination by foreign matter. The surface of the geomembrane shall be clean at the time of inspection. The geomembrane surface shall be swept or washed by the Installer if surface contamination inhibits inspection. The Installer shall ensure that an inspection of the geomembrane precedes any seaming of that section.
2. Each suspect location, both in seam and non-seam areas, shall be nondestructively tested using the methods described Part 3.5.I of this Section, as appropriate. Each location, which fails nondestructive testing shall be marked by the CQA Consultant and repaired by the Installer.
3. When seaming of a geomembrane is completed (or when seaming of a large area of a geomembrane is completed) and prior to placing overlying materials, the CQA Consultant shall identify all excessive geomembrane wrinkles. The Installer shall cut and re-seam all wrinkles so identified. The seams thus produced shall be tested like any other seams.

4. Repair Procedures:

- a. Any portion of the geomembrane exhibiting a flaw, or failing a destructive or nondestructive test, shall be repaired by the Geosynthetics Installer. Several repair procedures exist. The final decision as to the appropriate repair procedure shall be agreed upon between the CQA Consultant and the Geosynthetics Installer. The procedures available include:
 - vi. patching, used to repair large holes (and panel tee sections), tears, un- dispersed raw materials and contamination by foreign matter;
 - vii. abrading and re-seaming, used to repair small sections of extruded seams;
 - viii. spot seaming, used to repair minor, localized flaws;
 - ix. capping, used to repair long lengths of failed seams;
 - x. topping, used to repair areas of inadequate seams, which have an exposed edge less than 4 inches in length and
 - xi. removing bad seam and replacing with a strip of new material seamed into place (used with long lengths of fusion seams).
- b. In addition, the following shall be satisfied:
 - i. surfaces of the geomembrane which are to be repaired shall be abraded no more than 20 minutes prior to the repair;
 - ii. all surfaces must be clean and dry at the time of repair;
 - iii. all seaming equipment used in repair procedures must be approved;
 - iv. the repair procedures, materials and techniques shall be approved in advance, for the specific repair, by the CQA Consultant;
 - v. patches or caps shall extend at least 6 inches beyond the edge of the defect and all corners of patches shall be rounded with a radius of at least 3 inches and

- vi. the geomembrane below large caps shall be appropriately cut to avoid water or gas collection between the two sheets.

5. Repair Verification:

- c. Each repair shall be nondestructively tested using the methods described in Part 3.5.I of this Section, as appropriate. Repairs which pass the nondestructive test shall be taken as an indication of an adequate repair. Failed tests will require the repair to be redone and retested until a passing test result. At the discretion of the CQA Consultant, destructive testing may be required on large caps.

3.06 MATERIALS IN CONTACT WITH THE GEOMEMBRANE

- A. The Contractor shall take all necessary precautions to ensure that the geomembrane is not damaged during its installation or during the installation of other components of the containment system or by other construction activities.
- B. Granular materials shall not be placed on the geomembranes at ambient temperatures below 40°F or above 104°F. Unless otherwise noted, the maximum allowable height for a wrinkle shall be 6 inches.
- C. Equipment shall not be driven directly on the geomembrane. Unless otherwise specified by the CQA Consultant, all equipment used to spread and compact overlying fill shall comply with the following requirement:

Maximum Allowable Equipment Ground Pressure (psi)	Initial Lift Thickness of Overlying Compacted Fill (ft)
5	1.0
10	1.5
20	2.0
>20	min. 3.0

- D. In heavy traffic areas, such as access ramps and in areas trafficked by rubber tire vehicles, the thickness of overlying compacted fill should be at least 3 feet. Roads shall be at least

twice the width of the largest piece of equipment.

E. Appurtenances:

1. Installation of the geomembrane in appurtenant areas and connection of the geomembrane to appurtenances shall be made according to the Specifications and Construction Drawings. Extreme care shall be taken while seaming around appurtenances since neither nondestructive nor destructive testing may be feasible in these areas. The Installer shall ensure that the geomembrane has not been visibly damaged while making connections to appurtenances.
2. All clamps, slips, bolts, nuts, or other fasteners used to secure the geomembrane to each appurtenance shall be at least as durable as the geomembrane.

3.07 ELECTRICAL LEAK LOCATION SURVEY WIRE GRID INSTALLATION

- A. An electrical leak location survey (ELLS) shall be performed to identify any holes or defects that penetrate through the installed HDPE geomembrane. NV5 anticipates that the ELLS will need to adhere to the procedures described in ASTM D7002-16, or most current version if one exists, entitled "Standard Practice for Leak Location on Exposed Geomembranes Using the Water Puddle System." NV5 anticipates that an electrical current energized set of conductive bare minimum 16 American Wire Gauge (AWG) or heavier (lower AWG number) bare copper wires will need to be placed between the existing Hypalon geomembrane and the overlying new HDPE geomembrane, because the annular space between the geomembranes will be filled with air which is relatively non-conductive.
- B. An electrical leak location survey (ELLS) shall be performed to identify any holes or defects that penetrate through the installed HDPE geomembrane. NV5 anticipates that the ELLS will need to adhere to the procedures described in ASTM D7002-16, or most current version if one exists, entitled "Standard Practice for Leak Location on Exposed Geomembranes Using the Water Puddle System." NV5 anticipates that an electrical current energized set of conductive bare minimum 16 American Wire Gauge (AWG) or heavier (lower AWG number) bare copper wires will need to be placed between the existing Hypalon geomembrane and the overlying new HDPE geomembrane, because the annular space between the geomembranes will be filled with air which is relatively non-conductive.
- C. The contractor shall install the bare wire to create a square shaped grid with maximum 10-foot center-to-center spacings in both directions as shown on Construction Drawing No. 3.1. One set of the grid sides shall be oriented parallel to the long-axis of the pond and the other set shall be oriented parallel to the short-axis of the pond. The wire shall be

installed by unrolling from the spool and not by pulling off the end of the spool to minimize spirals, loops and kinks when installing.

- D. The ends of the wires shall exit the anchor trench from between the two geomembrane layers without contacting the earth ground surface. This can be most effectively accomplished by connecting an insulated AWG 16 wire to the bare AWG 16 wire at the bottom of the anchor trench and then extending the insulated wire out of the trench leaving a minimum of approximately 20 feet of insulated wire neatly coiled and tied on the surface. The ELLS consultant will then connect both wires to a generator to energize the wire grid with electrical current during the ELLS.
- E. The subconsultant that performs the ELLS shall prepare a report that describes the method and equipment used and the results of the completed ELLS. The ELLS subconsultant shall immediately clearly mark the hole location on the HDPE geomembrane surface. The ELLS subconsultant shall prepare a Site Plan figure with the approximate location of each identified hole and submit the figure to the CQA Monitor. The ELLS subconsultant shall retest all identified holes that are repaired by the geomembrane installer to ensure that the hole has been repaired to the satisfaction of the CQA Monitor.

3.08 GEOMEMBRANE ACCEPTANCE

- A. The Geomembrane Installer shall retain all ownership and responsibility for the geomembrane until accepted by the Owner.
- B. The geomembrane shall be accepted by the Owner when:
 - 1. the installation is completed;
 - 2. all documentation is submitted;
 - 3. verification of the adequacy of all field seams and repairs, including associated testing, is complete including the Electrical Leak Location Survey (ELLS);
 - 4. all warranties are submitted and
 - 5. written certification documents, including record drawings, sealed by the CQA Consultants' Engineer-of-Record have been received by the Owner.

3.09 PRODUCT PROTECTION

- A. The Geomembrane Installer shall use all means necessary to protect all prior work and all materials and completed work of other Sections.

- B. In the event of damage, the Geomembrane Installer shall make all repairs and replacements necessary, to the approval of the CQA Consultants and at no additional cost to the Owner.

Table 31 05 19.16 -1

REQUIRED HDPE GEOMEMBRANE PROPERTY VALUE
HDPE Geomembrane - 60 mil Double-Sided Textured

Properties	Test Method	Manufacturer QC Test Frequency	Conformance QA Test Frequency	Required Test Values ⁽⁸⁾
Thickness: <ul style="list-style-type: none"> • Minimum average • Lowest individual for any of the 10 values 	ASTM D5994	25 per Roll	1 per 100,000 sf	56 mil 22 mil
Asperity Height (min. ave.) ⁽¹⁾⁽²⁾	GM 12	1 per 50,000 sf	1 per 100,000 sf	12 mil
Specific Gravity (min. ave)	ASTM D792 Method A or ASTM D1505	1 per 50,000 sf	1 per 100,000 sf	0.940 g/cc
Tensile Properties ⁽³⁾ (min. ave.) <ul style="list-style-type: none"> • Yield strength • Break strength • Yield elongation • Break elongation 	ASTM D638 Type IV	1 per 50,000 sf	1 per 100,000 sf	150 lb/in 100 lb/in 12% 100%
Carbon Black Content (range)	ASTM D1603 (5)	1 per 50,000 sf	1 per 100,000 sf	2-3%
Carbon Black Dispersion ⁽⁶⁾	ASTM D5596	1 per 50,000 sf	1 per 100,000 sf	A1,A2,B1 Category 1, 2, or 3 ⁽⁶⁾
Stress Crack Resistance ⁽⁴⁾	ASTM D5397 (Single Point Method as modified by GRI GM5-B.)	(7)	N/A	400 hours
Notes: (5) Of 10 readings; 8 out of 10 must be ≥ 7 mils and lowest individual reading must be ≥ 5 mils. (6) Alternate the measurement side for double sided textured sheet. (7) Machine direction (MD) and cross machine direction (XMD) average values should be based on 5 test specimens each direction. <ul style="list-style-type: none"> • Yield elongation is calculated using a gage length of 1.3 inches. • Break elongation is calculated using a gage length of 2.0 inches. (8) The SP-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials. (9) Other methods such as D 4218 (muffle furnace) or microwave methods are acceptable if an appropriate correlation to D 1603 (tube furnace) can be established. (10) Carbon black dispersion (only near spherical agglomerates) for 10 different views: <ul style="list-style-type: none"> • 9 in Categories 1 or 2 and • 1 in Category 3. (11) Manufacturer may provide certification letter. (12) Based on GM13, Rev. 4, 12/13/00.				

Table 31 05 19.16 -2

REQUIRED HDPE GEOMEMBRANE SEAM PROPERTIES
HDPE Geomembrane - 60 mil Double-Sided
Textured Installation Testing Summary

Properties	Test Method⁽³⁾	Sample Size	Minimum Field Test Frequency	Acceptance Criteria
Shear Test ⁽¹⁾⁽²⁾	ASTM D6392 (excl. Section 6.3, "Conditioning")	42-in along seam, 12- in wide	Average 1 every 500 lf for each type of welding	Failure is more than 1 out of 5 non-FTB. Minimum yield strength for the seam is 150 lb/in
Peel Test ⁽¹⁾⁽²⁾ Hot Wedge Fusion	ASTM D6392 (excl. Section 6.3, "Conditioning")		Average 1 every 500 lf for each type of welding	Failure is more than 1 out of 5 non-FTB. Minimum yield strength for the seam is 118 lb/in
Peel Test ⁽¹⁾⁽²⁾ Fillet Extrusion	ASTM D6392 (excl. Section 6.3, "Conditioning")		Average 1 every 500 lf for each type of welding	Failure is more than 1 out of 5 non-FTB. Minimum yield strength for the seam is 100 lb/in
Vacuum	N/A	N/A	All single track wedge and extrusion seams tested by Vacuum	Examine weld for approximately 30 seconds through window of vacuum of minimum 5 psig
Air-Pressure	N/A	N/A	All Dual track seams tested by Air Pressure	For 60 mil, 3 psi drop with initial pressure 25- 30psi for 5 minutes, following an initial relaxation period.

- (1) Maximum of one-non FTB (Film Tear Bond) per five specimens tested is acceptable if strength requirements are met on that sample. Film Tearing Bond (FTB) definition: A failure in the ductile mode of one of the bonded sheets by tearing prior to complete separation to the bonded area. Examples of FTB and the associated locus of break codes are provided in ASTM D6392.
- (2) For double fusion welded seams, both tracks shall be tested for compliance with the minimum property values listed above.
- (3) Destructive seams will be evaluated for strength parameters according to ASTM D6392 (excluding Section 6.3 "Conditioning"). Destructive seams will be evaluated for elongation during cold weather seaming. Refer to Cold Weather Operations section of CQA plan.

END OF SECTION

SECTION 31 05 19.29
LEAK DETECTION SYSTEM
CLASS 2 SURFACE IMPOUNDMENT LINER REHABILITATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the installation of the leachate detection system including; sump pump and access pipe, gravel and electric leak location wire, as shown on the Construction Drawings and in the CQA plan for the Class 2 Surface Impoundment (Leachate Pond) Liner Rehabilitation Design.

1.02 RELATED SECTIONS

- A. Section 31 10 00 - Clearing, Grubbing and Stripping
- B. Section 31 23 33 - Geosynthetic Materials Anchor Trenches
- C. Section 31 05 19.16 – Geomembranes
- D. Section 31 05 19.26 – Geocomposites
- E. Section 31 05 19.13 – Geotextile

1.03 REFERENCES

- A. Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design
- B. Latest version of the American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D638. Standard Test Method for Tensile Properties of Plastics.
 - 2. ASTM D792. Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement.
 - 3. ASTM D882. Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - 4. ASTM D1004. Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 - 5. ASTM D1238. Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
 - 6. ASTM D1505. Standard Test Method for Density of Plastics by Density-Gradient Technique.
 - 7. ASTM D1603. Standard Test Method for Carbon Black in Olefin Plastics.
 - 8. ASTM D4355. Standard Test Method for Measuring the Deterioration of Geotextiles

Exposed to Xenon Arc Radiation (Ultraviolet Light), Moisture and Heat.

9. ASTM D4491. Standard Test Method for Measuring the Permittivity of Geotextiles.
10. ASTM D4533. Standard Test Method for Measuring the Trapezoidal Tearing Strength of Geotextiles.
11. ASTM D4632. Standard Test Method for Measuring the Grab Strength and Elongation of Geosynthetic Materials.
12. ASTM D4716. Standard Test Method for Measuring the Transmissivity of Geocomposite Drain Nets.
13. ASTM D4751. Standard Test Method for Measuring the Apparent Opening Size of Geotextiles.
14. ASTM D4833. Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
15. ASTM D5199. Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
16. ASTM D5261, Standard Test Method for Measuring the Mass Per Unit Area of Geotextiles
17. ASTM D5321. Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.
18. ASTM D5397. Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
19. ASTM D5596. Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
20. ASTM D5994. Standard Test Method for Measuring Core Thickness of Textured Geomembranes.
21. ASTM D6241. Standard Test Method for Determining the Puncture Strength of Geotextiles.
22. ASTM D6392. Standard Test Method for Determining the Integrity of Nonreinforced Geomembranes Seams Produced Using Thermo-Fusion Methods
23. ASTM D7005. Standard Test Method for Measuring the Peel and Shear Strengths of the Geosynthetic Material (i.e., Geomembranes, Geotextiles, Geocomposites) Interfaces.

C. Geosynthetic Research Institute:

- D. GRI-GM5. Seam Constant Tensile Load (SCTL) Test for Polyolefin Geomembrane Seams.

1.04 SUBMITTALS

- A. Prior to transporting a sump pump and associated fittings to the site, the Contractor shall submit the following materials documentation:
1. A list of materials to be furnished and the names of the suppliers.
 2. Quality control certificates prepared by the raw material suppliers including production dates of the raw materials.
 3. Pump specifications for a Solinst Model 415, 12 Volt, Submersible Pump or an approved equivalent. The manufacturer's information for the Solinst pump can be reviewed at the following website: <https://envirosupply.net/products/solinst-model-415-12v-submersible-pump>.

PART 2 - PRODUCTS

2.01 RISER PIPE

- A. Sump Access Pipe Properties
1. HDPE pipe lot production numbers.
 2. Sampling procedures.
 3. Results of the quality control tests for each of the properties listed in Table 31 05 19.29-1.
 4. All HDPE Pipe and fittings shall comply with ASTM F714 and ASTM D3350.
 5. All HDPE Pipe and fittings shall be polyethylene Type III piping manufactured from resin with a cell classification of 345464C per ASTM D3350.
 6. All HDPE Pipe and fittings shall have a 3-inch-outside diameter nominal pipe size (NPS) with a Standard Dimension Ratio (SDR) of SDR-17.
 7. HDPE Pipe shall be furnished perforated or non-perforated as specified on the Construction Drawings. Perforations shall be drilled into the pipe after manufacture.
 8. HDPE Pipes and fittings shall be homogeneous throughout and free of visible cracks, holes, (except for perforations as noted on the Construction Drawings), blisters, bubbles, undispersed raw materials, or any foreign inclusions or other deleterious effects.

2.02 LEAK DETECTION SYSTEM WIRE AND CABLE:

- A. All wire and cable shall be new and bear the UL label.

- B. Use solid copper wire.
- C. Provide 600 volt (V)-rated wire and cable for the secondary power distribution system. Typically, use type THWN/THHN above grade. If any portion of the circuit passes below grade, use type XHHW-2.
- D. Minimum Conductor Sizes:
 - 1. Power and Lighting Branch Circuits: No. 12 American Wire Gauge (AWG)
 - 2. Signal and Control Circuits over 100 V: No. 14 AWG.
 - 3. Low Voltage (50V or less): No. 16 AWG or specified cables.

2.03 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Provide precast boxes with pulling inserts, counting channels, knockouts and extensions as shown on the drawings.
- B. Utility power and telephone company pull and splice boxes: Comply to utility company precast box size and construction standards; provide their specified box accessories and grounding devices or products.
- C. Provide spring-assisted (to open) galvanized steel diamond plate covers that identify box service; (e.g., ELECTRIC POWER, LIGHTING, TELEPHONE), or as otherwise noted on the drawings. Furnish covers and locking latch designed for their location loading requirements: (e.g., full traffic, light vehicular traffic, or pedestrian traffic).
- D. Furnish 6-inch-diameter (minimum) sump for boxes having a concrete base (or floor).
- E. Provide a minimum 10-foot slack of all conductors on a neat loop in pull boxes designated for future use.

2.04 LEAK DETECTION SYSTEM GRAVEL

- A. Material shall be washed gravel and obtained and imported from off site.
- B. It shall be free of organic or other deleterious material.
- C. Material shall be hard, durable, and not subject to particle breakdown.
- D. It shall not contain limestone (carbonates) or other material that may adversely react with landfill leachate. Contractor shall provide certification from an independent testing laboratory that the proposed gravel has less than 10 percent carbonate rock and have consistent material properties which are summarized in Table 31 05 19.29-2.
- E. Gravel shall conform to the soundness and durability requirements shown in Table 31 05 19.29-2

2.05 SUMP PUMP

- A. The sump pump shall have consistent material properties which are summarized in Table 31 05 19.29-3.
- B. Handling and care of the sump pump prior to and following installation at the site shall be

the responsibility of the Contractor. The Contractor shall be liable for all damage to the materials incurred prior to final acceptance of the containment system by the Owner.

PART 3 - EXECUTION

3.01 RISER PIPE

A. Riser Pipe Placement

1. The Contractor will be responsible for placement of the riser pipe in compliance with the lines and grades as shown on the Construction Drawings.
2. The riser pipe shall be placed directly on the geocomposite liner when on the perimeter berm side slope and will extend to the bottom of the 6-inch-thick gravel filled sump at an approximate elevation of 424.0 feet above mean sea level (AMSL).
3. The riser pipe will be secured with metal straps to two concrete blocks that will be placed at the top of the perimeter earth berm slope as shown on the Construction Drawings.
4. The riser pipe will penetrate through the overlying HDPE geomembrane liner at the top of the slope which will require an HDPE geomembrane boot to be welded to both the HDPE geomembrane liner and HDPE sump access pipe.

B. Pump Placement

1. The Contractor will be responsible for placement of the sump pump inside the 3-inch-diameter HDPE sump access pipe and lowering it to the bottom of the pipe so that its intake screen is at the bottom of the pipe where it will be seated inside gravel filled sump at an approximate elevation of 424.0 feet above mean sea level (AMSL).

3.02 SUMP GRAVEL CONFORMANCE TESTING

- A. Samples of the sump gravel will be collected by the CQA Consultant and sent to the CQA Engineer's laboratory for testing to ensure conformance with the requirements of this Section. The Contractor shall account for this testing in the installation schedule. Only material which meets the requirements of this Section shall be installed.
- B. Samples will be selected by the CQA Consultant in accordance with this Section and with the procedures outlined in the CQA Plan.
- C. One representative sump gravel sample will be collected for conformance testing. If the Contractor requests additional representative soil sample be collected from the same quarry source or from additional quarry sources, then the Contractor will reimburse the Owner for all additional laboratory tests for these additional sump gravel sources.
- D. The CQA Consultant may increase the frequency of sampling if test results do not comply with the requirements of this Section. The additional testing shall be performed at the expense of the Contractor.
- E. As a minimum, tests shall be performed by the CQA Consultant to verify the following

minimum material properties of the sump gravel by the appropriate ASTM test methods listed in Table 02774-1:

1. Particle size gradation.
 2. Permeability.
- F. Any sump gravel sources that are not certified in accordance with this Section, or that conformance testing indicates do not comply with this Section, will be rejected by the CQA Consultant. The Contractor shall replace the rejected material with new material, at no additional cost to the Owner.

3.03 SUMP GRAVEL DEPLOYMENT

A. Placement

1. The Contractor will be responsible for placement of the sump gravel in compliance with the lines, grades and thicknesses as shown on the Construction Drawings.
2. The sump gravel thickness will vary from a maximum of 6-inches along the lowest portion of the surface impoundment bottom which is oriented in an east west direction at an approximate elevation of 424.0 feet above mean sea level (AMSL). The sump gravel will decrease in thickness to approximately 0-inches at the northern and southern limits as shown on the Construction Drawings.

B. Method of Placement

1. Due to the very thin geometry of the gravel sump, it will be necessary to place the sump gravel by hand-operated wheel barrels and hand-operated shovels.
2. Use of motorized equipment shall not be allowed to transport and place the sump gravel.
3. No motorized equipment shall be allowed to drive on and over the sump gravel while it is being placed and after it has been placed.

C. Defects and Repairs:

1. The sump gravel will be inspected before and after placement for evidence of defects, any sign of contamination by foreign matter and damage to the underlying liner components.
2. When placing the sump gravel the CQA Consultant shall identify all excessive geocomposite wrinkles caused by the placement of the sump gravel. The Contractor shall remove all wrinkles so identified.

3. Repair Procedures:

- a. Any portion of the sump gravel that is contaminated by foreign material shall be removed and replaced by the Contractor at no cost to the Owner. The final decision as to the appropriate repair procedure shall be agreed upon between the CQA

Consultant and the Contractor.

- b. Any portion of the in place geocomposite liner component that is damaged during placement of the sump gravel shall be repaired consistent with the methods described in Section 02772. The final decision as to the appropriate repair procedure shall be agreed upon between the CQA Consultant and the Contractor.
4. Repair Verification:
- a. Each repair shall be observed and approved by the CQA Consultant prior to placing any additional liner components.

3.04 SUMP GRAVEL ACCEPTANCE

- A. The Contractor shall retain all ownership and responsibility for the sump gravel until accepted by the Owner.
- B. The sump gravel shall be accepted by the Owner when:
 1. the installation is completed.
 2. all documentation is submitted.
 3. all warranties are submitted.
 4. written certification documents, including record drawings, sealed by the CQA Consultants' Engineer-of-Record have been received by the Owner.

3.05 LEAK DETECTION WIRE GRID

- A. Leak detection system wire shall be laid out on top of the geocomposite in a grid layout as shown on the contract drawings.
- B. Wire connection splices shall be kept to the minimum possible. Splices shall be wrapped in geotextile.

3.06 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Do not locate boxes in roadways unless specifically approved by the Resident Engineer.
- B. Make all precast joints walls, risers, and conduit entrances watertight using cement grout or sealant. Use cement grout consisting of two parts sand and one part cement and sufficient water to form a plastic slurry. Apply in a manner to insure filling of all joint voids and conduit entrances.
- C. Excavation and bedding: Excavation must allow for overall assembled height of boxes plus added height of risers and bedding material consisting of 6-inch compacted sand or gravel. Provide a minimum 4-inch clearance around the box exterior walls.
- D. Setting: Assemble boxes by lowering each section into the excavation. Lower, set and level base sections in place. The seal surfaces between sections must be cleaned and have gaskets in place before placing next section. Excavation hole must not contain water when setting the box.

- E. **Backfilling:** Provide compactable material such as pea gravel or sand. Not acceptable to use material such as saturated soil or material containing large rocks or chunks. Backfill after box completely installed and compact progressively from the bottom to the top surface.

3.07 ACCEPTANCE

- A. The Contractor shall retain all ownership and responsibility for the leak detection system until accepted by the Owner.
- B. The leak detection system shall be accepted by the Owner when:
 - 1. the installation is completed.
 - 2. all documentation is submitted.
 - 3. all warranties are submitted.
 - 4. written certification documents, including record drawings, sealed by the CQA Consultants' Engineer-of-Record have been received by the Owner.

3.08 PRODUCT PROTECTION

- A. The Contractor shall use all means necessary to protect all prior work, all materials, and completed work of other Sections.
- B. In the event of damage, the Contractor shall make all repairs and replacements necessary subject to the approval of the CQA Consultants and at no additional cost to the Owner.

Table 31 05 19.29-1

MINIMUM RISER PIPE PROPERTIES

Properties	Test Method	Manufacturer QC Test Frequency	Conformance QA Test Frequency	Required Test Values
Specific Gravity	ASTM D1505	1 per lot	Not Applicable	Min. Avg.0.94 Min. 3 Percent 3 Inch Outside Diameter SDR-17
Carbon Black Content	ASTM D1603	1 per lot	Not Applicable	
Nominal Pipe Size (NPS)	Not	1 per lot	1 per lot	
Standard Dimension Ratio (SDR)	Applicable	1 per lot	1 per lot	
	Not Applicable			

Table 31 05 19.29-2

MINIMUM LEAK DETECTION SYSTEM GRAVEL PROPERTIES

Properties	Test Method	Manufacturer QC Test Frequency	Conformance QA Test Frequency	Required Test Values
Particle Size Gradation	ASTM D6913	Not Applicable	1 Source ⁽¹⁾	US Sieve 3/4 Inch 1/2 Inch No. 4 No. 200
Permeability	ASTM D2434	Not Applicable	1 Source	Percent Passing 100 85 to 100 0 to 5 0 to 2
Soundness (Sodium Sulfate Method)	ASTM Standard C88	Not Applicable	1 Source	1.0 centimeters per second
Los Angeles Abrasion	ASTM C131	Not Applicable	1 Source	Less than 12 percent loss by weight after 5 cycles
				Percent shall be no greater than 30 after 500 Revolutions
Notes: (13) One representative sample from one quarry source. All additional samples tested will be at the Contractors expense.				

Table 31 05 19.29-3

MINIMUM SUMP PUMP PROPERTIES

Properties	Test Method	Manufacturer QC Test Frequency	Conformance QA Test Frequency	Required Test Values
Flow Rate At 120 Feet of Head	Not	Not Applicable	Not Applicable	3.6 gallons per minute 6 inches 3 Inch Outside Diameter 12 Volts
Pump Length	Applicable	Not Applicable	Not Applicable	
Pump Outside Diameter	Not	Not Applicable	Not Applicable	
Pump Power	Applicable	Not Applicable	Not Applicable	
	Not Applicable			

SECTION 31 10 00
CLEARING, GRUBBING, AND STRIPPING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the general material and construction requirements for clearing, grubbing, and stripping of trees and vegetation associated with the Final Cover Reconstruction of the Phase I module at the Buena Vista Landfill.

1.02 RELATED SECTIONS

- A. Section 01 57 00 –Temporary Controls
- B. Section 31 20 00 – Earthwork
- C. Section 31 23 33 - Geosynthetic Materials Anchor Trenches
- D. Section 31 05 19.16 - Geomembranes

1.03 REFERENCES

- A. Final Cover Construction Drawings
- B. Final Cover Construction Quality Assurance (CQA) Plan.
- C. CQA Plan for Class 2 Leachate Pond Rehabilitation Design.
- D. Construction Drawings for the Class 2 Leachate Pond Rehabilitation Design.

1.04 SUBMITTALS

- A. Submit written notice of intent to perform clearing, grubbing, or stripping to Owner at least 7 days in advance of performing these activities.
- B. If work is interrupted for reasons other than inclement weather, the Contractor shall notify the CQA Consultant a minimum of 24 hours prior to the resumption of work.

1.05 CONSTRUCTION QUALITY ASSURANCE

- A. Clearing, grubbing, and stripping shall be monitored as outlined in the CQA Plans for the Phase I Final Cover Reconstruction and Class 2 Leachate Pond Liner Rehabilitation Design.
- B. The Contractor shall be aware of the activities outlined in the respective CQA Plans and shall account for these activities in the construction schedule.

PART 2 - PRODUCTS

- A. Not Applicable

PART 3 - EXECUTION

3.01 PROTECTION

- A. Protect plant growth and features remaining outside of construction areas.
- B. Maintain site access for disposal operations.
- C. Locate and protect existing utilities and monitoring wells. Damage caused to existing utilities or wells by Contractor or its subcontractors shall be repaired by the Contractor at no added cost to the Owner.

3.02 CLEARING, GRUBBING, AND STRIPPING

- A. Clearing shall consist of cutting and removing all vegetation including trees, shrubs, grass, and other vegetative growth. Coordinate with Owner to confirm Owner has obtained any required free removal permits.
- B. Grubbing shall consist of the removal and disposal of wood or root matter below the ground surface remaining after clearing and shall include stumps, trunks, roots, or root systems to a minimum depth of 2 feet below the ground surface.
- C. Stripping shall include the removal and disposal of all organic sod, topsoil, plant growth and associated roots. Stripping shall extend to the bottom of the root zone to a maximum of 6 inches.
- D. Reuse stripping debris by incorporating it within the Vegetative Soil Layer.
- E. All cut and fill areas will be cleared, grubbed, and stripped prior to filling or grading to design elevations.
- F. Topsoil from the strippings will be stockpiled at a location designated by the Owner prior to reuse in the Vegetative Soil Layer.
- G. Conduct operations and maintain the project site so as to minimize dust creation and dispersion.

3.03 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

- A. Cleared and Grubbed Materials: Place the cleared and grubbed material (soils containing grasses and roots) at the direction of site personnel. Maintain cleared and grubbed material separate from final cover excavation soils.

- END OF SECTION -

**SECTION 31 20 00
SITE EARTHWORK**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes site earthwork for:
 - 1. Excavations
 - 2. Earthfill
 - 3. Disposal of Excess/Unsuitable Excavated Materials
- B. Related Sections:
 - 1. Section 31 10 00 – Clearing and Grubbing
 - 2. Section 31 20 13 – Vegetative Soil Cover
 - 3. Section 31 25 14.13 - Hydroseeding

1.02 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM C136 - 06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - 2. ASTM D421 - 85(2007) Standard Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants
 - 3. ASTM D422 - 63(2007) Standard Test Method for Particle Size Analysis of Soils ASTM D1140 - 00(2006) Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75 µm) Sieve
 - 4. ASTM D1556 - 07 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method
 - 5. ASTM D1557 - 12 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - 6. ASTM D2167 - 08 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - 7. ASTM D2216 - 10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - 8. ASTM D2434 - 68(2006) Standard Test Method for Permeability of Granular Soils (Constant Head)
 - 9. ASTM D2487 - 11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

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10. ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual Manual Procedure)
11. ASTM D4643 - 08 Standard Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Heating ASTM D4767 - 11 Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils
12. ASTM D4959 - 07 Standard Test Method for Determination of Water (Moisture) Content of Soil By Direct Heating
13. ASTM D5084 - 10 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
14. ASTM D5321 / D5321M - 13 Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear
15. ASTM D6938 - 10 Standard Test Method for In Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)

1.03 SUBMITTALS

- A. Contractor shall submit trench excavation and shoring standard operating procedures for review.

1.04 QUALITY ASSURANCE

- A. The Engineer shall take soil samples and perform moisture, density, gradation, and other tests to ascertain that the work is being performed in compliance with these Specifications. The Engineer shall conduct relative compaction and other tests on the fill, and related laboratory testing (ref. Table 31 20 00-1). The Contractor shall remove surface material and render assistance as necessary to enable sampling and testing.
- B. Earthfill Placement, Compaction, and Tolerances: See Table 31 20 00-2.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Sources: Materials shall be obtained from identified in-situ soils within the area excavations, on-site borrow areas.
- B. Contractor may take soil samples from the site for analyses after award of Contract.
- C. The Contractor shall visit the project site and assess the various properties of the soil materials that are available within the identified sources, in these Technical Specifications, and as shown on the Construction Drawings.
- D. All material excavated from the wastewater ponds for use as earthfill materials shall be free of organic and other deleterious materials as determined by the Engineer.

2.02 EARTHFILL

- A. Sources: Excavation of existing soil in the Phase I WMU area and designated borrow area.

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- B. Foundation layer and Impoundment Earthfill shall:
 - 1. Consist of clean, silt, clay soils, or clay silt mixtures.
 - 2. Have a maximum particle and aggregation size of 3 inches.

2.03 COMPACTED CLAY LINER

- A. Sources: Excavation of existing soil in the Phase I WMU area and designated borrow area.
- B. Compacted Clay Liner Earthfill shall:
 - 1. Free of visible organics (roots, leaves, grass, etc.), frozen materials, and stones/clods greater than 3-inches. Localized areas containing less than an estimated 5 percent by volume of visible organics and earth clods may be accepted as approved by the Design Engineer on a case-by-case basis.
 - 2. Consist of clean, silt, clay soils, or clay silt mixtures.
 - 3. Gradation with minimum 90% passing US No. 4 sieve.
 - 4. At least 50 percent fines passing the U.S. No. 200 sieve as determined by ASTM D422,
 - 5. Compacted hydraulic conductivity less than or equal to 1×10^{-6} centimeters per second (cm/sec) as determined by ASTM D5084,
 - 6. Liquid Limit between 10 and 50, and Plasticity Index between 5 and 35, as determined by ASTM D4318.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section shall be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected and verified by the Engineer.

3.02 PROTECTION OF EXPOSED SURFACES

- A. During periods of prolonged exposure (more than 1 week) of excavated or filled areas or stockpiles, the Contractor shall provide labor, materials, and equipment, as required to maintain and protect exposed surfaces of cut and fill slopes against wind and water erosion. Contractor shall submit methods to protect exposed surfaces to the Engineer. The Contractor shall be responsible for protective method effectiveness.
- B. The Contractor shall provide labor, material, and equipment to protect the wastewater ponds subgrade, as shown on the plans, from rainfall runoff accumulation. Rainfall surface runoff shall be diverted and pumped out of the subgrade. Runoff infiltration into the wastewater ponds subgrade area shall be minimized. Methods used for runoff diversion, pump out and infiltration control shall be submitted for approval by the Engineer.

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3.03 SURFACE IMPOUNDMENT ENGINEERED EARTHFILL

- A. Identify required lines, levels, contours, and datum before the start of earthwork operations.
- B. Earthwork shall conform to lines and grades indicated on the Construction Drawings and as specified in this section.
- C. Excavated materials, which conform to Specifications, may be used as fill. Excavated materials may be stockpiled for later use.
- D. Contractor shall construct and maintain temporary drainage ditches to provide drainage during construction.
- E. Contractor shall provide siltation control and management during construction.
- F. Contractor shall not damage components of the impoundment including geomembranes, GCL, PVC pipe, and HDPE pipe. Damage caused by the Contractor shall be repaired at the Contractor's expense consistent with the applicable specification requirements.
- G. Contractor may have to screen material to meet maximum aggregation.

3.04 EXCAVATION

- A. After clearing, stripping and grubbing, the contractor shall excavate the existing final cover such that fine grain soil suitable for compacted clay liner reconstruction is segregated and stockpiled from larger grain soils.
- B. General:
 - 1. Excavate in areas and to the grades indicated on the Construction Drawings or specified herein.
 - 2. At all times, the Contractor shall conduct operations in such manner as to prevent free-standing water.
 - 3. Contractor shall remove material that does not meet the specification and disposed of as specified in Article 3.07. The disposed materials shall be replaced with compacted materials meeting the applicable requirements specified in Article 2.02, 2.06, 2.07, and in Table 31 20 00-2.
 - 4. Provide adequate working space within limits of the excavation for personnel safety.
 - 5. The Contractor shall preserve the material below and beyond the lines of all excavation. Where excavation is carried out below grade, the Contractor shall backfill with earthfill to the required grade and conform to the requirements of Table 31 20 00-2 for placement, lift thickness, placement tolerance, subgrade and lift density, moisture content, and test methods.
 - 6. Excavation carried out for the convenience of the Contractor shall conform to the limits approved by the Engineer and shall be at no additional expense.
 - 7. Excavated material shall be placed at sufficient distance from the edge of excavations to prevent cave-ins or bank slides. Side slopes of stockpiles shall not be steeper than 2:1 (horizontal/vertical). Side slopes of excavations shall be as indicated on the Construction Drawings.

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SITE EARTHWORK**

3.05 EXCAVATED MATERIAL STOCKPILES

- A. Materials excavated from the site may be used by the Contractor as fill for construction of various features including berms, site grading, or placed on site at direction of site operator.
- B. If required by the Contractor's schedule or work activities, the material may be placed temporarily in stockpiles at locations approved by the Owner. Material in stockpiles shall be protected from contamination of any kind that would render it unsuitable for use in fills.
- C. The Contractor shall ensure that turbid water from the stockpile areas does not enter nearby waterways during construction, until the project is accepted. Provide siltation control and management measures in accordance with the approved Storm Water Pollution Prevention Plan (SWPPP).
- D. Deposit excavated soil not incorporated into the work in locations designated by site operator.

3.06 SUBGRADE PREPARATION

- A. The Contractor shall finish the subgrade surface such that the surface is firm, non-yielding, and reasonably smooth for the placement of the HDPE geomembrane liner. Areas exhibiting pumping or significant deflection under equipment traffic shall require repair as outlined in part 3.07(A) below.
- B. The Contractor shall prepare all sloping areas where the HDPE geomembrane will be placed directly over the slope by smooth drum rolling the slopes.

3.07 EXCAVATION BELOW GRADE

- A. Where the CQA Consultant deems subgrade material to be unsatisfactory, excavation below grade will be required to such depths to be determined in the field as necessary to remove the unsatisfactory material. Authorized excavation below grade shall be of the same contract classification as that above it provided it is removed in the same operation as the normal excavation.
- B. If the excavation below grade is required because of negligence on the part of the Contractor, the necessary excavation below grade and the backfilling required to restore the surface satisfactorily shall be at the Contractor's sole expense.
- C. The subgrade backfill areas shall be moisture conditioned as necessary to obtain the specified compaction per Section 02222.

3.08 PROTECTION OF SUBGRADE

- A. After preparing the subgrade as above specified, all unnecessary traffic shall be kept off. Should it be found necessary to haul over the prepared subgrade, the Contractor shall drag and roll the traveled way as frequently as may be necessary to remove ruts, cuts, and breaks in the surface. All cuts, ruts, and breaks in the surface of the subgrade that are not removed by the above operations shall be raked and hand tamped. All equipment used for transporting materials over the prepared subgrade shall be equipped with pneumatic tires to prevent tearing of surface.
- B. Continued use of the prepared subgrade surface for hauling materials that results in damaging it will not be permitted. The Contractor shall protect the prepared subgrade surface from both the Contractor's own and public traffic.

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- C. If necessary, the Contractor will be required, at the Contractor's sole expense, to place planks on the subgrade surface before hauling materials or equipment over it as directed by the CQA Consultant.
- D. The subgrade surface shall be maintained in the finished condition until the HDPE geomembrane is placed over it.

3.09 EARTHFILL CONSTRUCTION

A. General Requirements:

- 1. Earthfill materials shall be placed and compacted to the lines and grades shown on the Construction Drawings.
- 2. If any portion of the materials placed as fill by the Contractor does not meet the specified requirements, then the Contractor shall remove such material and replace it with fill materials meeting the Specifications at no additional cost.
- 3. Constructed fills shall be maintained to meet the requirements of this Specification until final completion and acceptance of the work. This shall include all measures to prevent erosion. During seasonal or other extended shutdowns, all exposed surfaces shall be protected with special treatments specified in Article 3.02 above.

B. Placing Requirements:

- 1. No material shall be placed on any portion of the subgrade or against or upon any structure until the Engineer has verified that this material meets these specifications.
- 2. Place materials in conformance to the requirements of Table 31 20 00-2.
- 3. Earthfill materials may require moisture conditioning (wetting or drying) prior to placement and compaction. Some materials may require spreading and extended drying time prior to placement and compaction. Moisture-conditioning requirements shall be as specified in Table 31 20 00-2.
- 4. Contractor shall place earthfill materials in continuous and approximately 8" thick uniform lifts for their full length and width, unless otherwise specified or specifically permitted by the Engineer.
- 5. Method of dumping and spreading materials shall ensure uniform distribution of the material.
- 6. Loose thickness of each lift of materials shall be as specified in Table 31 20 00-2.
- 7. Unless otherwise indicated, earthfill materials shall be placed to a grade no flatter than 2 percent to facilitate drainage of water. In areas where ponding cannot be prevented or ponding has occurred and fill is required to be placed, placing shall begin only after the area is dewatered and permission is obtained from the Engineer.

C. Compaction Requirements:

- 1. Each lift of earthfill material shall be per Table 31 20 00-2.

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2. During compaction, uniform moisture distribution shall be obtained by diskings, blading, or other methods.
3. If the rolled surface of any in-place lift is too wet for proper compaction of the next succeeding lift to be placed thereon, then the materials from the in-place lift shall be removed and allowed to dry, or worked with harrow, scarifier, or other suitable equipment to reduce the water content, and then recompact before the next succeeding lift is placed.
4. Fill compacted to densities lower than the specified minimum density, or fill compacted at moisture contents outside the specified acceptable range of moisture content shall be reworked to meet the density and moisture requirements or removed and replaced by acceptable fill compacted to meet these requirements.

3.10 COMPACTED CLAY LINER EARTHFILL CONSTRUCTION

- A. Comply with pertinent provisions of related sections and referenced specifications.
- B. Soil materials shall be scarified as shown on the Construction Drawings and processed if necessary to meet these specifications, moisture conditioned, and recompact to the density and moisture requirements of Table 31 20 00-2.
- C. Prepared surfaces shall be inspected by the Engineer prior to placement of overlying vegetative layer soil. The Contractor shall request inspection by the Engineer.
- D. Tested and accepted compacted clay liner soil shall be covered immediately after placement with vegetative layer soil to prevent desiccation.

3.11 QUALITY ASSURANCE

- A. The Engineer will take samples and perform tests as indicated in Table 2200-1 throughout the construction period. The Contractor shall cooperate in providing access for testing and shall schedule his earthwork activities to avoid interference with testing. Verifying and documenting that the work is done in accordance with the Contract is of the essence.
- B. Additional tests may be performed at the Engineer's discretion.
- C. Placement tolerance shall be as specified in Table 31 20 00-1
- D. The Contractor's Surveyor shall measure final elevations and horizontal coordinates on a 20-foot grid pattern and at significant grade breaks on the graded area of the Class 2 Leachate Pond Liner Rehabilitation Design. The Contractor shall provide the Surveyor with access to all areas to be surveyed and shall cooperate fully with the Surveyor. Deficiencies identified in the survey shall be corrected by the Contractor to comply with these Specifications and the Construction Drawings.

3.12 TOLERANCES

- A. All excavation and fill limits shall be constructed within a tolerance of ± 0.5 ft for horizontal state plan coordinates, and to the vertical tolerances in Table 31 20 00-2. All grading shall be performed to maintain slopes and drainage as shown on the Drawings.
- B. A Surveyor licensed in the State of California shall prepare record documentation to confirm that the tolerances are as required. The record documentation shall be reviewed by the CQA

**SECTION 31 20 00
SITE EARTHWORK**

Engineer for approval prior to placement of each subsequent layers. As-built documentation is required for finished subgrade.

3.13 DUST CONTROL

- A. Implement dust control measures as required by Section 01500 – Temporary Controls.

**SECTION 31 20 00
SITE EARTHWORK**

Table 31 20 00-1
Earthwork Material Evaluation Testing Frequency

ASTM Test Designation¹	Engineered Earthfill (CY)	Foundation Layer (CY)	Compacted Clay Liner (CY)	Vegetative Soil Layer (cy)
D2488-09a (Visual Soil Description)	10,000	10,000	10,000	10,000
D2487-11 (Soil Classification)	10,000	10,000	10,000	10,000
D1557-12 (Compaction)	10,000 (min 2 tests)	10,000 (min 2 tests)	10,000 (min 2 tests)	10,000 (min 2 tests)
D422-63 (2007) or C136 -06(Particle Size)	10,000	10,000	10,000	10,000
D1140-00(2006) (#200 Sieve Wash)	10,000	10,000	10,000	10,000
D4318-10 (Atterberg Limits)	10,000	10,000	10,000	10,000
ASTM D5084 (Hydraulic Conductivity)			10,000 (min 2 tests)	
D2216-10 (Moisture Content)	10,000	10,000	10,000	10,000
ASTM D6938/17a In- Place Density & Moisture (Nuclear)	1,000	1,000	250	1,000

¹ Minimum one test per material type.

**SECTION 31 20 00
SITE EARTHWORK**

Table 31 20 00-2
Fill Placement, Compaction, and Tolerances

Fill Type	Loose Lift Thickness (in.)	Moisture Content	Minimum Lift Density	Method of Test	Thickness Tolerance (ft)
CCL Preparation	8 Maximum	0 to 4% wet of optimum	90%	ASTM D1557-12	+ 0.1 - 0.0
Foundation Layer & Engineered Earthfill	8 Maximum	$\pm 3\%$ of optimum	90% ⁽²⁾	ASTM D1557-12	+0.1- 0.1
Vegetative Soil Layer	8 Maximum	$\pm 3\%$ of optimum	85% ⁽²⁾	ASTM D1557-12	+0.1- 0.1

¹ Maximum lift thickness.

² Unless otherwise stated on the Construction Drawings

END OF SECTION

**SECTION 31 20 13
VEGETATIVE SOIL LAYER**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for placement of the vegetative soil layer associated with the reconstruction of the Phase I WMU final cover system at the Buena Vista Landfill.

1.02 RELATED SECTIONS

- A. Section 31 20 00 – Earthwork
- B. Section 31 25 14.16 – Drainage Facilities
- C. Section 31 25 14.13 - Hydroseeding

1.03 REFERENCES

- A. Latest version of American Society for Testing and Materials (ASTM) standards
- B. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. Provide written notice to the CQA Engineer at least 7 days in advance of performing work under this section.

1.05 QUALITY ASSURANCE

- A. Observation, sampling and testing will be performed by the CQA Engineer or the Owner’s designee to confirm that the materials and construction are in compliance with the requirements of these specifications and the CQA Plan. Make allowances for sampling and testing by the CQA Engineer in both production and scheduling.

PART 2 - PRODUCTS

2.01 VEGETATIVE LAYER MATERIAL

- A. The Vegetative Layer material shall be obtained from soils excavated from the Phase I WMU existing final cover and designated on-site borrow sources. Vegetative soil shall be in accordance with the following gradations to be considered:

<u>Sieve Size</u>	<u>Percent Passing</u>
#4	90 – 95
#40	20-45
#200	20

Proposed offsite borrow sites shall have all applicable operating permits and approvals in accordance with Public Contracting Code Section 10295.5 and other applicable regulations to be considered for this project.

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VEGETATIVE SOIL LAYER**

- B. Where placed on the final cover slopes greater than 4:1 (horizontal to vertical) sideslopes, vegetative layer soil shall exhibit an unconfined compressive strength of at least 0.5 tons per square foot as determined by ASTM D2166.
- C. Vegetative material shall form a firm, stable base when placed.

PART 3 - EXECUTION

3.01 PLACEMENT OF VEGETATIVE SOIL LAYER

- A. The Vegetative Soil Layer shall be initially placed in one, loose 12-inch thick lift.
- B. The Vegetative Soil Layer Material shall be compacted to 85% of modified Proctor density by track-walking with a low-ground pressure dozer at a moisture content within -3% to +5% of optimum as determined by ASTM D1557.
- C. Contractor is responsible for moisture conditioning the vegetative soil materials to the required moisture range.
- D. Material not meeting specified moisture criteria shall be reworked or replaced, at no additional cost to the Owner.
- E. Grade and restore areas inadvertently disturbed during construction to their original grade and profile.
- F. Water used for moisture conditioning shall be obtained from sources approved by the Owner.
- G. Final grading shall be completed to the lines and grades shown on the Drawings and within the tolerances in Article 3.03. The final surface shall be firm, non-yielding, and free from debris or other deleterious material.
- H. Implement dust control measures throughout the vegetative soil processing and placement.

3.02 TOLERANCES

- A. The final grade of the finished vegetative layer shall be within -0.0 to +0.2 ft of the design elevation. At the discretion of the Owner, the thickness may exceed the plus tolerance provided that the minimum design thickness and grades are achieved.
- B. A surveyor licensed in the State of California shall prepare as-built documentation for the vegetative layer to verify that the tolerances are met. As-built documentation shall consist of an as-built survey record drawing.

- END OF SECTION -

SECTION 31 21 00
WASTE EXCAVATION AND PLACEMENT

PART 1 - GENERAL

- A. Section includes
 - 1. Loading, hauling, and placing excavated waste material in the designated refuse limits fill areas as shown on the Drawings.
 - 2. Excavating, loading, hauling, and placing soil for daily cover as required.
- B. RELATED SECTIONS
 - 1. Section 31 10 00 – Site Clearing, Grubbing, and Stripping.
 - 2. Section 31 20 00 – Earthwork.

PART 2 - PRODUCTS

2.01 MUNICIPAL WASTE MATERIALS

- A. Municipal waste (refuse) and construction debris or otherwise unsuitable materials to be excavated from the landfill and placed within the refuse limits fill area.
- B. Contractor may remove material from site at their option at no additional cost to OWNER.

2.02 DAILY COVER SOIL

- A. Soil meeting requirements of Section 02200 to be placed as daily cover.
- B. Alternative daily cover (ADC) materials (tarps, etc.) may be allowed upon approval of the OWNER and/or ENGINEER.

2.03 FOUNDATION LAYER

- A. Place and compact a minimum of two feet of on-site borrow soil on top of the last lift of refuse placed within the landfill area, while maintaining the grades and slope shown on the Drawings.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Set required lines, levels, contours, and datum by construction staking.
- B. Notify utility company to locate utilities, if applicable.
- C. Provide water for dust control and potential fire suppression.
- D. Provide litter fences for the control of windblown litter. CONTRACTOR shall be responsible for the collection and disposal of all windblown litter created from the excavation and placement of refuse.
- E. Protect bench marks, existing structures, and fences from excavation equipment and vehicular traffic.
- F. Provide for dewatering as necessary for excavation and placement of waste and daily cover.

SECTION 31 21 00
WASTE EXCAVATION AND PLACEMENT

- G. Note that topography shown on drawings may differ from topography at time of construction. A pre-construction survey shall be performed by the CONTRACTOR to document site conditions prior to starting work. The OWNER may conduct a third party survey verification of the pre-construction survey.
- H. Provide a safety plan and work plan for waste excavation, loading, hauling, placement and compaction of the excavated refuse that addresses the potentially hazardous conditions that may be encountered as described in Part 3.2 of this section.

3.02 HAZARDOUS CONDITIONS

- A. The CONTRACTOR is advised that potentially hazardous and flammable landfill gases (such as methane) may be generated within the construction site and that gas may emit from the refuse during excavation. In addition, fires may potentially break out due to refuse being exposed to oxygen.
- B. The CONTRACTOR shall be responsible for providing and operating test equipment to monitoring for the presence of methane and adequate levels of oxygen. If necessary, the CONTRACTOR shall provide and operate suitable blower of sufficient capacity to maintain the air quality within the work area in a condition such that the concentrations of methane gas and oxygen are within acceptable limits.
- C. The CONTRACTOR shall comply with all Federal, State, and local safety rules and regulations. The CONTRACTOR shall prohibit his employees from smoking or using open flames within 50 feet of open trenches, wells, or excavations or where any combustible gas has been detected.
- D. The OWNER or his representative may inspect the work area for compliance with safety rules and regulations and is empowered to stop any phase of the work, which he deems unsafe. Unless otherwise provided in the Contract Documents, the CONTRACTOR shall not be entitled to any compensation from the OWNER for any work stoppage due to poor safety conditions, which could have been prevented by the CONTRACTOR.
- E. The gas from the decomposition of refuse contains trace concentrations of some compounds know to be carcinogenic at greater concentrations. The CONTRACTOR shall be responsible for instructing his personnel to utilize any other safety precautions he deems necessary or appropriate for his worker's safety.

3.03 EXCAVATION

- A. Notify OWNER of unexpected exposure of waste immediately and discontinue affected work in area until notified to resume work.
- B. Provide dust and windblown litter control and protect workers as appropriate for handling municipal solid waste during excavation and filling operations.
- C. The CONTRACTOR shall excavate the waste (refuse) such that large sections of refuse are not exposed.
- D. After the CONTRACTOR has completed the grading to the lines, grades, and elevations shown on the Drawings, the ENGINEER shall evaluate the area and determine if any refuse is present below the excavation.
- E. The CONTRACTOR shall survey any over-excavations and present the quantities of additional material placed to the ENGINEER for payment in accordance with the Bid Schedule.

SECTION 31 21 00
WASTE EXCAVATION AND PLACEMENT

3.04 WASTE AND DAILY COVER SOIL PLACEMENT

- A. Load, haul, place, and compact all excavated waste and other unsuitable materials in the top deck fill area shown on the Drawings and as defined in the Work Plan.
- B. Compact waste in lifts not exceeding 1-foot in thickness using a Caterpillar D8 dozer or equivalent. Place waste only in areas of the designated fill.
- C. Load, haul, and place 6-inches of daily cover soil or approved ADC over waste at end of working day or within a stockpile near the working face for placement at end of working day.
- D. Provide water for windblown litter and dust control, as necessary.
- E. If allowed, place alternative daily cover (such as tarps) over waste at the end of the working day.

- END OF SECTION -

SECTION 31 23 13
SUBGRADE PREPARATION
CLASS 2 LEACHATE POND LINER REHABILITATION DESIGN

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section covers the work necessary for the preparation of the containment system subgrade areas including work necessary to prepare the HDPE geomembrane subgrade. The subgrade will be considered as those areas and surfaces upon which the overlying HDPE geomembrane materials are to be placed under these Specifications. The HDPE geomembrane subgrade preparation shall be performed for the top surface of the general earth fill and geomembrane anchor trench backfill soil.
- B. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the construction of the subgrade areas as specified herein, as shown on the Construction Drawings, and in accordance with the Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- C. The Contractor shall be prepared to construct the subgrade in conjunction with the installation and construction of the other components as shown on the Construction Drawings.

1.02 RELATED SECTIONS

- A. Section 31 10 00 - Clearing, Grubbing and Stripping
- B. Section 31 20 00 - Earthwork
- C. Section 31 25 00 - Erosion and Sediment Controls
- D. Section 31 23 33 - Geosynthetic Materials Anchor Trenches
- E. Section 31 05 19.16 - Geomembranes

1.03 REFERENCES

- A. Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- B. Construction Drawings.
- C. Latest version of American Society for Testing and Materials (ASTM) standards:
 1. ASTM D1557 — Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).
 2. ASTM 2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.
 3. ASTM D4959 - Standard Test Method for Field Determination of Water (Moisture) Content of Soil and Aggregates by Direct Heat Method.

4. ASTM D6938 — Standard Test Method for the In Place Determination of Soil and Aggregates Moisture Content and Density by the Nuclear Methods (Shallow Depth).

1.04 SUBMITTALS AND NOTIFICATIONS

- A. The Contractor shall notify the CQA Consultant in writing a minimum of 7 days in advance of intention to perform the work of this Section.
- B. If work is interrupted for reasons other than inclement weather, the Contractor shall notify the CQA Consultant a minimum of 24 hours prior to the resumption of work.

1.05 CONSTRUCTION QUALITY ASSURANCE

- A. The subgrade preparation shall be monitored as outlined in the Construction Quality Assurance (CQA) Plan for the Class 2 Leachate Pond Liner Rehabilitation Design.
- B. The Contractor shall be aware of the activities outlined in the CQA Plan and shall account for these activities in the construction schedule.
- C. The Owner will perform quality assurance testing during geomembrane subgrade preparation consisting of:
 1. Field density and moisture content per ASTM D6938, D2216 and D4959 to be used, as needed.
 2. Moisture-density relationships per ASTM D1557.
 3. Verifying that angular or sharp rocks and other debris, that could damage the HDPE geomembrane, are removed from the prepared subgrade surface. Verifying that the prepared subgrade surface is free of irregularities and is steel drum rolled smooth prior to installing the HDPE geomembrane.
 4. Verifying that the final surface provides continuous and intimate contact with the overlying HDPE geomembrane.
 5. Other inspections described in the Construction Quality Assurance (CQA) for the Class 2 Leachate Pond Liner Rehabilitation Design documents for the project.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The preparation of subgrade primarily involves the excavation and placing general earth fill to the design grades within excavated areas in compliance with Section 02221. However, areas requiring placement of general fill shall be compacted as specified in Section 02222. In this regard, material used for compaction shall contain no deleterious materials and rock particles greater than 3 inch largest dimension.

2.02 EQUIPMENT

- A. Furnish all necessary equipment required to accomplish the excavating, shaping, grading

and rolling, and compaction specified herein.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. The Contractor shall finish the subgrade surface such that the surface is firm, non-yielding, and reasonably smooth for the placement of the HDPE geomembrane liner. Areas exhibiting pumping or significant deflection under equipment traffic shall require repair as outlined in part 3.2A below.
- B. The Contractor shall prepare all sloping areas where the HDPE geomembrane will be placed directly over the slope by smooth drum rolling the slopes.

3.02 EXCAVATION BELOW GRADE

- A. Where the CQA Consultant deems subgrade material to be unsatisfactory, excavation below grade will be required to such depths to be determined in the field as necessary to remove the unsatisfactory material. Authorized excavation below grade shall be of the same contract classification as that above it provided it is removed in the same operation as the normal excavation.
- B. If the excavation below grade is required because of negligence on the part of the Contractor, the necessary excavation below grade and the backfilling required to restore the surface satisfactorily shall be at the Contractor's sole expense.
- C. The subgrade backfill areas shall be moisture conditioned as necessary to obtain the specified compaction per Section 02222.

3.03 PROTECTION OF SUBGRADE

- A. After preparing the subgrade as above specified, all unnecessary traffic shall be kept off. Should it be found necessary to haul over the prepared subgrade, the Contractor shall drag and roll the traveled way as frequently as may be necessary to remove ruts, cuts, and breaks in the surface. All cuts, ruts, and breaks in the surface of the subgrade that are not removed by the above operations shall be raked and hand tamped. All equipment used for transporting materials over the prepared subgrade shall be equipped with pneumatic tires to prevent tearing of surface.
- B. Continued use of the prepared subgrade surface for hauling materials that results in damaging it will not be permitted. The Contractor shall protect the prepared subgrade surface from both the Contractor's own and public traffic.
- C. If necessary, the Contractor will be required, at the Contractor's sole expense, to place planks on the subgrade surface before hauling materials or equipment over it as directed by the CQA Consultant.
- D. The subgrade surface shall be maintained in the finished condition until the HDPE geomembrane is placed over it.

3.04 FIELD QUALITY CONTROL

- A. The Contractor's Surveyor shall measure final elevations and horizontal coordinates on a

20 foot grid pattern and at significant grade breaks on the graded area of the Class 2 Leachate Pond Liner Rehabilitation Design. The Contractor shall provide the Surveyor with access to all areas to be surveyed and shall cooperate fully with the Surveyor. Deficiencies identified in the survey shall be corrected by the Contractor to comply with these Specifications and the Construction Drawings.

3.05 TOLERANCES

- A. Tolerances for location and grade are provided in Sections 02221 and 02222 of these Specifications.

- END OF SECTION -

SECTION 31 23 16.13
TRENCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. The Contractor shall furnish all labor, materials, tools, supervision, transportation, equipment and incidentals necessary to complete trenching as specified herein, as shown on the Construction Drawings including, but not necessarily limited to, trenching, backfilling, and compacting as specified herein and as needed for a complete and proper installation of anchor trenches and drainage control system.

B. Related Sections:

1. Section 26 05 33 - Basic Electrical Materials and Methods
2. Section 33 05 33 - HDPE Pipe

1.02 REFERENCES

- A. Oregon Standard Specifications for Construction, 2008 Edition, Section 00405 – Trench Excavation, Bedding, and Backfill.
- B. Occupational Safety and Health Administration (OSHA) standards for Trenching and Shoring.
- C. ASTM D2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
- D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D3017 Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
- F. ASTM C136 Method for Sieve Analysis of Fine and Coarse Aggregates.
- G. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))

1.03 DEFINITIONS

- A. Backfill: Material placed in trenches or other excavation.

1.04 QUALITY ASSURANCE

- A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- B. Comply with all requirements of governmental agencies having jurisdiction, particularly as it relates to trench safety systems.
- C. The Contractor shall render assistance, as necessary, to the CQA Officer to perform tests in accordance with the CQA Plan.

**SECTION 31 23 16.13
TRENCHING**

1.05 FIELD MEASUREMENTS

- A. Verify that survey benchmarks, control points, and intended elevations for the Work are as shown on drawings.

PART 2 - PRODUCTS

2.01 UNDERDRAIN TRENCH BACKFILL

- A. This is only for the earthfill material of the underdrain lateral trenches and the underdrain header trench. The aggregate backfill material will be as per Section 31 23 16 Excavation and Fill.
- B. Engineered Fill, as specified in Section 312316. Backfill material is subject to the acceptance of the Owner, and is that material removed from excavations or imported from on-site borrow areas, and is soil free from roots and other deleterious matter.
- C. Maximum particle size 1 inch.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely, safe, and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Comply with health and safety requirements specified in Section 00 07 19 Health and Safety Requirements.
- C. Free standing liquid may be encountered during excavation especially in trenches. The liquid may be hazardous. Notify the Engineer immediately. If free standing liquid is encountered the Engineer will determine how it is to be removed.

3.02 GENERAL PROCEDURES

- A. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods.
- B. Keep trenches and site construction area free from standing water.
- C. If waste is encountered, it shall be handled as described in Section 01 74 00 Cleaning and Waste Management.

3.03 PROCEDURES

- A. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- B. Maintain access to adjacent areas at all times.

3.04 DEWATERING

- A. Remove all water, including storm water, encountered during trench and sub-structure

SECTION 31 23 16.13
TRENCHING

work to an approved location by pumps, drains, and other approved methods.

- B. Keep trenches and site construction area free from water.

3.05 TRENCHING

- A. Comply with pertinent provisions of related sections.
- B. Trenching for Underdrain Laterals and Header:
 1. During trenching operations, take all reasonable precautions to preserve and protect existing subgrade as generally depicted on the Construction Drawings.
 2. Provide staking of the location of the underdrain trenches along the linear layout of the trenches prior to excavation.
 3. Verify accuracy of staking.
 4. Engineer to approve staking prior to excavation commencing.

3.06 SHEETING AND SHORING

- A. The Contractor shall furnish, place and maintain sheeting and bracing where required to support the sides of excavation, to prevent movement which could in any way diminish the width of excavation below that necessary for proper construction, to protect adjacent structures, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel piling, braced wood lagging and shoulder beams, or other approved methods. Care shall be taken to prevent voids beside the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill the void, lean concrete shall be used as backfill at no additional expense to the Owner.
- B. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall withstand all pressures to which the trench will be subjected. Any deformation shall be corrected at the expense of the Contractor, so as to provide the necessary clearances and dimensions.
- C. Where sheeting and bracing are required to support the sides of excavation or trenches, the CONTRACTOR shall engage a Professional Structural or Civil Engineer, registered in the State of Oregon, to design sheeting and bracing. Installed sheeting and bracing shall conform to the design, and the Professional Structural or Civil Engineer shall provide certification of this.
- D. No wood sheeting is to be withdrawn if driven below mid diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe.

**SECTION 31 23 16.13
TRENCHING**

3.07 BACKFILLING

A. General:

1. The Contractor shall not place bedding or backfill in trenches until subgrade has been inspected and approved by the Engineer.
2. Do not completely backfill trenches until required pressure and leakage tests have been performed, if applicable.
3. Backfill trenches to the ground surface with materials shown on the Construction Drawings.
4. Place backfill material in layers not greater than 6 inches thick and in a manner that equalizes pressures on the structure and minimizes stresses. Moisture condition material to achieve -3 to +3 percent of optimum moisture content as determined by the proctor test method (ASTM D698). Thoroughly tamp and compact all trench backfill with machine or pneumatic operated tampers of a size and type that will obtain the 95% compaction as determined by ASTM D698.
5. Reopen trenches which have been improperly backfilled. Refill and compact as specified or otherwise correct to the approval of the Engineer.
6. Do not allow or cause any of the Work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, tests, and approvals.
7. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such Work and, after approvals have been made, refill and compact as specified, all at no additional cost to the Owner.

B. Underdrain Lateral and Header Trenches

1. Begin only when subgrade excavation has been completed. Take special care in backfilling operations to protect aggregate, HDPE Pipe and Geotextile.
2. The first lift of underdrain trench backfill may be placed with a maximum loose lift thickness of 12 inches.
3. Place earthfill in layers not exceeding 6 inches in thickness, and compact to 95 percent relative compaction of ASTM D698 at -3 to +3 of the optimum moisture content.
4. Place earthfill to the lines and grades shown on the Drawings. Grade final surface to a vertical tolerance of plus or minus 0.10 feet.

3.08 REPAIRS TO GEOSYNTHETICS

A. Damage to geosynthetics shall be handled as follows:

SECTION 31 23 16.13
TRENCHING

1. Notify Engineer immediately.
2. Damaged geosynthetics shall be repaired in accordance with repair procedures specified in Section 02540 HDPE Pipe after the CQA Consultant, Engineer or Owner has investigated the damage.

- **END OF SECTION** -

SECTION 31 23 33
GEOSYNTHETIC MATERIALS ANCHOR TRENCHES
CLASS 2 LEACHATE POND LINER REHABILITATION DESIGN

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Trenching, backfilling and compacting for installation of Class 2 Leachate Pond Rehabilitation Design HDPE Geomembrane anchor trench.

1.02 RELATED SECTIONS

- A. Section 02110 - Clearing, Grubbing and Stripping
- B. Section 02219 - Stockpiling and Soil Management
- C. Section 02222 - Engineered Earthfills
- D. Section 02270 - Erosion and Sediment Controls
- E. Section 02520 - Subgrade Preparation
- F. Section 02530 - Geomembranes

1.03 REFERENCES

- A. OSHA Safety Requirements for Trenching and Shoring.
- B. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).

PART 2 - PRODUCTS

2.01 COMPACTED ANCHOR TRENCH SOIL BACKFILL

- A. General earthfill shall consist of excavated on-site soils free from landfill waste, organic materials, and other materials which may be highly compressible, or which cannot be properly compacted.
- B. Shall not contain blocks, broken concrete, masonry rubble, debris, expansive soil, or other deleterious material.
- C. Maximum particle size of 3 inches largest dimension.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work included in this Section will be performed. Correct conditions detrimental to timely, safe, and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINISH GRADE ELEVATIONS AND LINES

- A. Comply with lines and grades shown on the Drawings.

SECTION 31 23 33
GEOSYNTHETIC MATERIALS ANCHOR TRENCHES
CLASS 2 LEACHATE POND LINER REHABILITATION DESIGN

3.03 EXISTING UTILITIES

- A. The Owner will mark existing utilities within the construction area.
- B. If active utility lines are encountered and are not shown on the Drawings or otherwise made known to the Contractor, notify Owner in writing, then promptly take necessary steps to assure that service is not interrupted.
- C. If service is interrupted as a result of work under this Section, immediately notify Owner, then restore service by repairing the damaged utility at no additional cost to the Owner.
- D. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Owner and secure his instructions prior to continuing work.
- E. Do not proceed with permanent relocation of utilities until written instructions are received from the Owner.

3.04 PROTECTION OF PERSONS AND PROPERTY

- A. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or within public access.
- B. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
- C. Protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

3.05 DEWATERING

- A. Remove all water, including rainwater, encountered during trench work to an approved location by pumps, drains, and other approved methods as required.
- B. Keep trenches free from water.

3.06 TRENCHING

- A. Provide sheeting and shoring necessary for protection of the Work and for the safety of personnel. Provide shoring in accordance with State of California and federal regulations as required.
 - 1. Provide sheeting or shoring for any portion of trench 5 ft in depth or greater in accordance with applicable safety regulations. The Occupational Safety Health Act (OSHA) applies to all excavation, trenching, and ditching operations on this project. Contractor is responsible for worker safety and the Owner assumes no responsibility.
 - 2. Prior to backfilling, remove all sheeting.
 - 3. Do not permit sheeting to remain in the trenches except when, in the opinion of the Owner or CQA Consultant, field conditions or the type of sheeting or methods of construction makes removal of sheeting impracticable. In such cases, the Owner or

SECTION 31 23 33
GEOSYNTHETIC MATERIALS ANCHOR TRENCHES
CLASS 2 LEACHATE POND LINER REHABILITATION DESIGN

CQA Consultant may permit portions of sheeting to be cut off and remain in the trench.

- B. Trench to the minimum width necessary for proper installation of the HDPE geomembrane liner. Accurately grade the bottom to provide uniform bearing for the HDPE geomembrane liner.

3.07 PLACEMENT OF COMPACTED SOIL BACKFILL IN ANCHOR TRENCHES

- A. Place the HDPE geomembrane in the anchor trenches as shown in the Construction Drawings.
- B. Place any compacted soil backfill inaccessible to large equipment by compacting with small mechanical or vibratory compactors (i.e., Jumping-Jacks).
- C. Place compacted soil backfill with a maximum uncompacted loose lift (layer) thickness of 8 inches. Compact to achieve a minimum relative compaction of 90% of the maximum dry density at a moisture content of from 0 to 4 percentage points greater than the optimum moisture content per ASTM D1557.
- D. Do not place anchor trench backfill soil under water.
- E. Maintain the moisture content of each compacted anchor trench backfill soil lift.
- F. Place and compact the anchor trench soil backfill to the lines, grades, cross sectional requirements, and dimensions shown on the Construction Drawings.
- G. Grade final compacted soil backfill surfaces to remove ruts and gouges. Finish the compacted soil backfill above grade by wheel-rolling along the length of the anchor trench.
- H. Tolerances:
 - 1. Horizontal ± 0.5 foot (150 mm)
 - 2. Vertical ± 0.1 foot (20 mm)

3.08 BACKFILL QUALITY CONTROL

- A. General:
 - 1. Do not completely backfill trenches until required tests (e.g., geomembrane seam integrity tests) have been performed, and until the utilities systems installed conform to the requirements specified in the pertinent sections of these Specifications.
 - 2. Reopen trenches, which have been improperly backfilled, to the depth required for proper compaction. Refill and compact as specified, or otherwise correct to the approval of the CQA Consultant, at no additional cost to the Owner.
 - 3. Do not allow or cause any of the Work performed or installed materials to be covered up or enclosed by work of this Section prior to required inspections, tests, and approvals.

SECTION 31 23 33
GEOSYNTHETIC MATERIALS ANCHOR TRENCHES
CLASS 2 LEACHATE POND LINER REHABILITATION DESIGN

4. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such Work and, after approvals have been made, refill and compact as specified, all at no additional cost to the Owner.

3.09 FIELD QUALITY ASSURANCE

- A. The CQA Consultant will inspect open cuts and trenches before installation. The Owner will check the following during installations:
 1. Check backfill for proper layer thickness and compaction density.
 2. Verify that test results conform to the specified requirements, and that sufficient tests are performed.
 3. Check for proper anchor trench dimensions.
 4. Verify that the HDPE geomembrane materials are placed in the anchor trenches as shown in the Construction Drawings.
 5. Verify that the HDPE geomembrane materials are not damaged during the placement of compacted soil backfill.
 6. Assure that defective work is removed and properly replaced.

- END OF SECTION -

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

PART 1: GENERAL

1.01 WORK OF THIS SECTION

- A. The work of this section generally involves installation of erosion and sediment control measures. Areas to receive erosion and sediment controls shall be determined in the field as needed by the ENGINEER.
- B. Areas requiring erosion and sediment control will include the soil stockpiles.

1.02 1.02 RELATED SECTIONS

- A. Section 31 10 00 – Site Clearing, Grubbing, and Stripping.
- B. Section 31 20 00 – Earthwork
- C. Section 31 20 13 – Vegetative Cover
- D. Section 31 25 14.16 – Geosynthetic Overside Drains

1.03 SUBMITTALS

- A. CONTRACTOR shall submit an Erosion Control Plan at least 14 days prior to the start of work. The erosion control plan shall detail the methods, materials, installation procedures, and schedule for all erosion control measures for this project. The Erosion Control Plan shall include sufficient detail and explanation needed to verify compliance with all applicable local, State, and federal regulatory requirements relative to erosion and sediment control for this project.

1.04 SEQUENCING AND SCHEDULING

- A. All erosion control features must be approved by the ENGINEER before beginning site earthwork.
- B. Route runoff from cleared or disturbed areas. Route through temporary sediment traps, straw bale barriers, or silt fences. Place erosion control facilities prior to any earthwork, clearing, and grubbing. It is preferable for construction to progress in an upstream direction starting with downstream erosion control facilities as the first items of construction.
- C. Stabilize disturbed ground at the end of each work day. Perform surface roughening immediately upon reaching final grade of non-lined areas by uniformly track-walking up and down the slope with a crawler tractor or sheepsfoot roller, leaving a pattern of cleat imprints that parallel the slope contours. Implement permanent soil stabilization and erosion/sedimentation controls upon reaching final grade.
- D. Notify the ENGINEER of any soils showing signs of erosion.
- E. Ensure that all waters from any dewatering operations reaching existing water courses meet or exceed the existing quality of the water course.

1.05 RETENTION OF EROSION CONTROL FACILITIES

- A. Maintain all installed erosion control features during the entire construction period.
- B. Leave in place, all erosion control features after final completion of work.

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

PART 2: PRODUCTS

2.01 GENERAL

- A. Product specifications described below pertain to erosion control features that may be used on the Project.

2.02 2.02 SILT FENCE

- A. Woven geotextile supplied in minimum 3.5 foot widths and meeting the requirements of Table 31 25 00-1:

TABLE 31 25 00-1

WOVEN GEOTEXTILE PROPERTIES

TEST	TEST DESIGNATION	UNIT	REQUIREMENT
Grab Tensile Elongation	D4632	%	50 - 114
Grab Tensile Strength	D4632	lbs	100 min.
Puncture Resistance	D4833	lbs	60 min.
Permitivity	D4491	Sec ⁻¹	0.1 - 0.5
Apparent Opening Size	D4751	mm	0.5 - 0.85
Burst Strength	D3786	psi	190 min.

- B. Support Fence: 2-inch by 2-inch by 14-gage wire mesh fencing in 3-foot-wide rolls.
- C. Posts: 2-inch by 2-inch by 4.5-foot-long standard (or better) hardwood posts, or 4.5-foot-long steel fence posts weighing 1.33 pounds per linear foot.
- D. Fasteners: Heavy duty wire staples at least 1-inch-long, tie wires, or hog rings.
- E. Gravel Backfill: LCRS Granular Material.

2.03 2.03 STRAW BALE BARRIER

- A. Bales: Straw bales, minimum size 15-inch x 15-inch x 36 inch.
- B. Posts: Per 2.02.

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

2.04 2.04 EROSION CONTROL MAT

- A. Enkamat II or other approved high velocity erosion mat.

PART 3: EXECUTION

3.01 REQUIREMENTS

- A. CONTRACTOR is responsible for meeting regulatory requirements for this project. Implement erosion control practices and procedures as required and in accordance with approved Erosion Control Plan, Waste Discharge Requirement R3-2008-0011, and the Authority's and Contractor's Storm Water Pollution Prevention Control Plan. If the erosion control measures are inadequately maintained, or are found to be inadequate in the field, install additional measures to prevent sediment laden runoff from leaving the site at CONTRACTORS sole expense.
- B. CONTRACTOR shall notify the ENGINEER at least 7 days prior to installation of each of the erosion control features or materials.
- C. CONTRACTOR will verify that all soil surfaces on which features are being installed comply with feature Supplier's recommendations and these Specifications.

3.02 SILT FENCE INSTALLATION

- A. Drive fence posts a maximum of 18 inches below the soil surface elevation (outside of finish cover system) at a maximum spacing of 6 feet in areas requiring silt fence. The fence line should be at a constant elevation for each continuous length of silt fence.
- B. Place wire mesh support fencing and fabric back-to-back (fabric on the upslope side) and extend 12 inches into the trench, leaving 24 inches of fencing and fabric above ground level. Fasten filter fabric and wire mesh support fencing to posts using heavy-duty 1-inch wire staples for wood posts, or wire rings for steel posts. At each post, place fasteners at the top of the fence, at ground level, and halfway in between.
- C. Join wire support fence ends by overlapping a minimum of 6-inches and connecting the two sections with wire rings in four places. If fabric joints are necessary, cut the wire support fence, sandwich the wire and fabric ends between two wood posts, and bind the posts tightly together.
- D. Lengthwise along the top of the silt fence and at ground level, tie fabric to wire support fencing with wire rings at a maximum spacing of 3 feet. Backfill trench with drainage gravel or Caltrans Class 1, Type A drainage material.

3.03 STRAW BALE BARRIER CONSTRUCTION

- A. Excavate a one bale wide strip of soil 4-inches-deep, perpendicular to the flow direction in the channel. Remove all grass and other materials that may allow underflow.
- B. Install straw bales end-to-end, with the bindings oriented horizontally around the sides of the bales. Anchor each bale into trench. Push bales together as firmly as possible.
- C. Chink the gaps between bales with straw to prevent water from escaping between bales. This must be done carefully to avoid separating the bales. Place and compact excavated soils against the upstream side of the straw bale barrier to a height of 4 inches to prevent piping under bales.

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

3.04 EROSION CONTROL MAT

- A. Prior to installation, broadcast seed within in the channel in accordance with the seeding requirements for bare slopes.
- B. Install erosion control mat at locations, widths, and dimensions shown on the Construction Drawings. Contractor shall take care as to minimize the traffic over the seeded areas during installation of the erosion control mat.
- C. Install, overlap, and anchor erosion control mat in accordance with the Manufacturer's and Supplier's guidelines. Anchoring shall include stapling, nailing, initial anchor trenches, check anchor trenches, longitudinal anchor trenches, and terminal anchor trenches as recommended by the Manufacturer or Supplier.

3.05 MAINTENANCE

- A. General Requirements: Observe the facilities during the first storm following construction to ensure that the facilities are properly located, constructed, and operating as designed. Maintain and repair facilities as needed to ensure that they continue to work as designed. Consult the ENGINEER and OWNER prior to repair of the facilities to determine the suitability of the design and repair procedure.
- B. Silt Fence: Check for sagging fences, torn fabric, and signs of erosion and/or sedimentation down slope of the fence. Make repairs as necessary. If the silt fence fails due to storm water runoff inundating the fence, construct additional erosion and sediment control measures to remove sediment from and convey the runoff to downstream drainage facilities. Remove accumulated sediment behind silt fences whenever it reaches approximately one-third the height of the fence.
- C. Straw Bale Barrier: Check for undercutting, damaged bales, evidence of erosion or sedimentation between bales, and "end run" erosion at the ends of the barrier. Make repairs, replace bales, and remove sediment before it reaches approximately one-half the height of the barrier.
- D. Erosion Control Mat: Check for damage, displacement, or unanchored portions of the erosion control mat. Repair or replace or re-anchor materials as needed.

- **END OF SECTION** -

**SECTION 31 25 14
REVEGETATION**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the revegetation for Phase I, Corrective Closure Construction Project at the Buena Vista Landfill.

1.02 RELATED SECTIONS

- A. Section 31 20 13– Vegetative Soil Layer

PART 2 - PRODUCTS

2.01 FERTILIZER AND AMENDMENTS

- A. Fertilizer shall be commercial fertilizer used in a pelletized or granular form and shall be (by Percent). Initial Application Rate; 400 lbs. per acre of pelletized Yara Triple 15 (YaraMila miniprils 15-15-15) or equivalent. Initial fertilizer should be applied prior to seeding.
1. Nitrogen: 15% (60 lb. N)
 2. Phosphorus: 15% (60 lb. P₂O₅)
 3. Potassium: 15% (60 lb. K₂O)
 4. Sulfur: 6.1% (inherent to fertilizer brand, can be omitted if use equivalent brand)
- B. Amendments applied at tons per acre per year. Amendments can be allied by traditional spreader truck. Amendments should be applied in late fall, prior to rain events.

2.02 HYDROSEED

- A. Seed
1. Seed required to be labeled under the California Food and Agriculture Code, shall be labeled by the vendors supplying such seed. Seed shall have been tested for purity and germination not more than 15 months prior to the application of such seed. The test results from such seed testing shall be submitted to the County prior to applying the seed. Seed labels furnished by the seed vendors supplying such seed shall indicate the purity and germination as determined by such seed testing. Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist certified by the Society of Commercial Seed Technologists. The percentage of seed germination shall include the germination percentage of any hard seed.
 2. Seed can consist of the following:

**SECTION 31 25 14
REVEGETATION**

Vegetation Names (common)	Application Rate (lbs./acre)
Zorro Fescue Grass	21
Blando Brome Grass	4.7
Crimson Clover	4.7
Arroyo Lupine	0.3
California Poppy (can be substituted)	0.14
Blue Flax (can be substituted)	0.14

3. Recommended seed: Stover Seed Company, a California Company; Wildfire Seed Mix #1. Native grass seed or Wildflower seed can be added. The recommended seed is for under 4000 feet of elevation and is for erosion control and low water areas.
- B. Tackifier, shall be Terra Tack TR or equivalent at a rate of 150 lbs./acre.
- C. Mulch
1. Fiber mulch mixed at a rate of 1500 lbs./acre
 2. Wood fiber mulch mixed at a rate of 30-35 pounds of dry matter per 100 gallons of water and applied at a rate of 1,500-2,000 lbs./acre

PART 3 - EXECUTION

3.01 HYDROSEEDING

- A. Apply seed to disturbed surface areas. At a minimum, this includes the top deck and north, west and south side-slopes.
- B. Mix seed and Tackifier per manufactures recommendations and apply at the specified rates using hydraulic methods. Seed shall be applied between October and November after an adequate rain event. Proper soil moisture is required for seed germination. If no rain events, apply one inch of water 14 days prior to seeding. If no rain events with-in 4 weeks of seeding, apply one inch of water to enhance tillering stage, to avoid over-application verify no rain is in forecast for two weeks. Proper droplet size shall be set to minimize washout of the small plants.
- C. Mulch can be applied simultaneously or immediately after seed. Tackifier is applied during seeding.

- END OF SECTION -

**SECTION 31 25 14.16
HYDROSEEDING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes
 - 1. Preparing, seeding, fertilizing, and mulching the vegetative layer soil.
 - 2. Hydroseeding materials include seed mix, fertilizer, mulch, straw and tackifier.
- B. Related Sections
 - 1. Section 31 20 13 – Vegetative Layer

1.02 SUBMITTALS

- A. Submit the following 30 days prior to hydroseeding operations.
 - 1. Seed mix product data sheet.
 - 2. Fertilizer product data sheet.
 - 3. Mulch product data sheet.
 - 4. Product data sheet for tackifier.
 - 5. Certifications that seed mix is free of noxious seed.

1.03 HYDROSEEDING WINDOW

- A. Complete hydroseeding between September and no later than October 15 of any given year.

1.04 WARRANTY

- A. Warranty period is 1 year.
- B. Replant areas that do not produce cover within the warranty period at no expense to Authority.

PART 2 - PRODUCTS

2.01 WATER

- A. Shall be clear and suitable for agricultural use.
- B. Reclaimed water may be used; however, it must be tested by a certified laboratory and found suitable for plant growth before it is applied.
- C. If water is obtained at the site, it shall be done so only under permit where facilities are utilized.
- D. Shall be added to the slurry mixture in sufficient quantity to ensure uniform distribution of hydromulch solids.

**SECTION 31 25 14.16
HYDROSEEDING**

2.02 SEED

A. Seed Mix:

1. Seed required to be labeled under the California Food and Agriculture Code, shall be labeled by the vendors supplying such seed. Seed shall have been tested for purity and germination not more than 15 months prior to the application of such seed. The test results from such seed testing shall be submitted to the County prior to applying the seed. Seed labels furnished by the seed vendors supplying such seed shall indicate the purity and germination as determined by such seed testing. Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist certified by the Society of Commercial Seed Technologists. The percentage of seed germination shall include the germination percentage of any hard seed. Certified free of noxious seed.

2. Seed can consist of the following:

Vegetation Names (common)	Application Rate (lbs./acre)
Zorro Fescue Grass	21
Blando Brome Grass	4.7
Crimson Clover	4.7
Arroyo Lupine	0.3
California Poppy (can be substituted)	0.14
Blue Flax (can be substituted)	0.14

3. Stover Seed Company, a California Company; Wildfire Seed Mix #1 or equivalent. Native grass seed or Wild flower seed can be added. The recommended seed is for under 4000 feet of elevation and is for erosion control and low water areas.

- B. All seeds shall be in conformance with the California State Seed Law of the Department of Food and Agriculture.
- C. Each bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer’s guarantee, and dates of test.
- D. Seed containers shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained.
- E. Prior to seeding at the request of the CQA OFFICER, the CONTRACTOR shall provide a letter of certification, original Association of Official Seed Analysts (AOSA)-certified seed test results, and calculation of PLS content.
- F. The CQA OFFICER may at the time of delivery examine the seed and sample the seed using methods recognized by the AOSA. Contact the local County Agricultural Commissioner for procedures or assistance.

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- G. All legume seed shall be pellet-inoculated as provided in Bulletin AXT-280 of the University of California Cooperative Extension, “Pellet Inoculation of Legume Seed”. Inoculant sources shall be species-specific and shall be applied at a rate of 2 pounds of inoculant per one hundred pounds of seed.

2.03 FERTILIZER

- A. Fertilizer shall be commercial fertilizer used in a pelletized or granular form and shall be (by Percent). Initial Application Rate; 400 lbs. per acre of pelletized Yara Triple 15 (YaraMila miniprils 15-15-15) or equivalent. Initial fertilizer shall be applied prior to seeding. Fertilizer can be applied using a traditional spreader.

Nitrogen: 15% (60 lb. N)

Phosphorus: 15% (60 lb. P₂O₅)

Potassium: 15% (60 lb. K₂O)

Sulfur: 6.1% (inherent to fertilizer brand, can be omitted if use equivalent brand)

- B. Shall conform to the requirements of the California Food and Agricultural Code.
C. Shall be pelleted or granular form.

2.04 FIBER MULCH

- A. Fiber mulch mixed at a rate of 1500 lbs./acre
B. Wood fiber mulch mixed at a rate of 30-35 pounds of dry matter per 100 gallons of water and applied at a rate of 1,500-2,000 lbs./acre

2.05 TACKIFIER

- A. Tackifier, shall be Terra Tack TR or equivalent at a rate of 150 lbs./acre.

2.06 HYDROSEEDING EQUIPMENT

- A. Hydroseeder that utilizes water as carrying agent and maintains continuous agitation of seed mix.
B. Hydroseeder with operating capacity sufficient to agitate, suspend, and mix specified products into a homogeneous slurry.
C. Distribution and discharge lines large enough to prevent clogging.
D. Spray nozzles which provide a uniform distribution of slurry.
E. Alternative application methods other than hydroseeding method described herein may be proposed.

PART 3 - EXECUTION

3.01 PREPARATION AND EXAMINATION

- A. Notify OWNER 2 days prior to hydroseeding operations.
B. Hydroseed shall be applied to a freshly-graded surface while soil remains friable and weed-free. Remove deleterious material.
C. If seeding area is compacted, loosen top ½ inch of soil to create favorable conditions for

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germination. Method to be approved by the CQA OFFICER.

- D. Verify areas to receive hydroseed are graded and track-walked with dozer cleats perpendicular to slope.
- E. Apply on soil that is surface moist.
- F. Verify that areas that received hydroseed are not damaged by construction activity. Correct damaged areas at no additional cost to the OWNER.
- G. Do not hydroseed when the ground is frozen, excessively wet, otherwise unsuitable.

3.02 WEATHER LIMITATIONS

- A. Apply during the following months: September, October, or November, unless otherwise approved by the AUTHORITY.
- B. Do not hydroseed when winds affect the distribution of seed application.
- C. Apply on soil that is surface moist.

3.03 EQUIPMENT

- A. Hydraulic-type pressure spray distribution system.
- B. Provide tank large enough to mix grass seed, fertilizer, mulch, and water into a slurry and provide continuous mixing and agitating.

3.04 MIXING AND PLACING

- A. Hydroseeding shall be made in the following single application:
 - 1. All seed, fertilizer, and stabilizing emulsion with 2,000 pounds of mulch per acre.
 - 2. The seed shall be applied within 60 minutes of being added to the slurry tank.
 - 3. The hydroseeding slurry components shall be discharged from the tank within 4 hours to prevent destruction of the seed.
 - 4. The CONTRACTOR shall add 50% more of the originally-specified seed mix to any slurry mixture which has not been applied within 4 hours after mixing. The CONTRACTOR shall add 75% more of the original seed mix after 12 hours and recharge the mix completely after 36 hours without discharge.

3.05 HYDROSEED APPLICATION

- A. Apply seed to disturbed surface areas. At a minimum, this includes the top deck and north, west and south side-slopes.
- B. Mix seed and Tackifier per manufactures recommendations and apply at the specified rates using hydraulic methods. Seed shall be applied between October and November after an adequate rain event. Proper soil moisture is required for seed germination. If no rain events, one inch of water shall be applied 14 days prior to seeding. If no rain events with-in 4 weeks of seeding, apply one inch of water to enhance tillering stage. To avoid over-application verify no rain is in forecast for two weeks. Proper droplet size shall be

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set to minimize washout of the small plants.

- C. Mulch can be applied simultaneously or immediately after seed. Tackifier shall be applied during seeding.

3.06 PROTECTION

- A. Protect hydroseeding area from damage.
- B. Repair damaged areas.

3.07 CLEANING AND REPAIR

- A. Remove access material and waste from site.
- B. Repair damaged areas at no additional cost to OWNER.

3.08 WARRANTY AND ACCEPTANCE

- A. Completed areas will be inspected after hydroseeding operations. Completed areas will conditionally accepted based on compliance with specified materials, application rates, execution, and maintenance. All seed and bag tags will be removed and provided to the Engineer at the conclusion of each working day.
- B. All completed areas must be guaranteed for one year from the date of conditional acceptance to be in healthy, stable, and flourishing conditions.
- C. At the end of the one-year warranty period, OWNER and CONTRACTOR will perform additional inspection of completed areas. Repair and/or replace defective areas noted.

- END OF SECTION -

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PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the material and construction requirements for overside drainage channels associated with the Final Cover Reconstruction of the Phase I waste management unit at the Buena Vista Landfill.

1.02 RELATED SECTIONS

- A. Section 02110 - Clearing, Grubbing, and Stripping
- B. Section 02200 – Earthworks
- C. Section 02230 – Waste Excavation and Placement

1.03 REFERENCES

- A. Latest Version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
 - 2. ASTM C150 - Standard Specification for Portland Cement
 - 3. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar ASTM D792 – Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement
 - 4. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
 - 5. ASTM D1204 - Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
 - 6. ASTM D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
 - 7. ASTM D1505 - Standard Test Method for Density of Plastics by Density-Gradient Technique
 - 8. ASTM D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
 - 9. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics
 - 10. ASTM D1907 - Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method

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11. ASTM D2256 - Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method
12. ASTM D3218 - Standard Specification for Polyolefin Monofilaments
13. ASTM D3895 – Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry.
14. ASTM D4218 - Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds By the Muffle-Furnace Technique.
15. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
16. ASTM D5261 - Standard Test Method for Measuring Mass per Unit Area of Geotextiles
17. ASTM D5321 - Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method
18. ASTM D5323 – Standard Test Method for Determination of 2% Secant Modulus for Polyethylene Geomembranes
19. ASTM D5397 – Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
20. ASTM D5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
21. ASTM D5617 – Standard Test Method for Multi-Axial Tension Test for Geosynthetics
22. ASTM D5721 – Standard Practice for Air-Oven Aging of Polyolefin Geomembranes
23. ASTM D5885 – Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry
24. ASTM D5994 – Standard Test Method for Measuring Core Thickness of Textured Geomembrane
25. ASTM D6392 – Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
26. ASTM D6693 – Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

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27. ASTM D6913 - Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
 28. ASTM D7007 – Standard Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earth Materials
 29. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
 30. ASTM C150 - Standard Specification for Portland Cement
 31. ASTM C387 - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar
 32. ASTM D1335 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
 33. ASTM D1577 - Standard Test Methods for Linear Density of Textile Fibers
 34. ASTM D4595 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 35. ASTM D5793 - Standard Test Method for Binding Sites per Unit Length or Width of Pile Yarn Floor Coverings
 36. ASTM D5823 - Standard Test Method for Tuft Height of Pile Floor Coverings
 37. ASTM D5848 - Standard Test Method for Mass per Unit Area of Pile Yarn Floor Coverings
 38. ASTM D6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe
- B. American Concrete Institute (ACI) - 306R-10 Guide to Cold Weather Concreting
- C. Latest version of Geosynthetics Research Institute (GRI) testing methods:
1. GRI-GM11– Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device.
 2. GRI-GM12 –Measurement of the Asperity Height of Textured Geomembranes Using a Depth Gage
 3. GRI-GM13 – Test Methods, Test Properties, and Testing Frequency and for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes
 4. GRI-GM19 - Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes

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1.04 SUBMITTALS

- A. Pre-Production and Pre-Shipment – Submit to the Owner’s Representative
 - 1. Certificate of Compliance: Certificate of Compliance shall indicate that the engineered turf meets or exceeds the property values in Table 02720-1. Also, the turf fiber color / blend shall be indicated.
 - 2. Provide representative manufacturer Product Data Sheet.
 - 3. Provide one (1) representative product sample.
 - 4. Provide manufacturer’s quality control program for the engineered synthetic turf component, including test procedures and frequency for this project.
 - 5. Provide Material Safety Data Sheets (MSDS) for the engineered synthetic turf and for the cementitious infill.
 - 6. Provide Installation Guidelines.
- B. Prior to mobilization of the Installer to the site, Contractor shall submit the following information from Geosynthetic Installer:
 - 1. Installation schedule.
 - 2. Installation capabilities, including:
 - 3. Information on equipment proposed for this project;
 - 4. Average daily production anticipated for this project; and
 - 5. Quality control procedures.
 - 6. Resume of the superintendent to be assigned to this project, including dates and duration of employment.
 - 7. Resumes of all personnel who will perform seaming/welding operations on this project, including dates and duration of employment.
- C. During the installation, the Installer shall be responsible for the timely submission to the Owner’s Representative of subgrade acceptance certificates, signed by the Installer, for each area to be covered with the engineered turf.

PART 2 - PRODUCTS

2.01 DELIVERY, STORAGE AND HANDLING

- A. Delivery:

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1. Deliver materials to the site only after the Owner's Representative and the Owner approve required submittals.
 2. CQA Personnel shall observe and document that all rolls of delivered to the site have been properly identified with the following for Engineered Synthetic Turf:
 3. Manufacturer's name
 4. Product identification
 5. Lot number
 6. Roll number
 7. Roll dimensions.
 8. CQA Personnel shall observe and document the following with regard to Engineered Synthetic Turf:
 9. The synthetic turf is wrapped in rolls with protective covering.
 10. The rolls are not damaged during unloading.
 11. Protect the synthetic turf from mud, soil, dirt, dust, debris, cutting, or impact forces.
 12. Each roll must be marked or tagged with proper identification.
 13. Separate damaged materials from undamaged materials and store at locations designated by the Owner until proper disposition of material is determined by the Owner and the Owner's Representative.
 14. Separate rolls without proper documentation and store until the Owner's Representative approval is received.
- B. On-Site Storage:
1. Store in space allocated by the Owner.
 2. Protect from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or other damage.
 3. Store the engineered turf on level prepared surface (not on wooden pallets). The prepared surface for the engineered turf should be graded to drain away from Geosynthetic drain material components.
 4. Stack the engineered turf no more than three rolls high.

C. On-Site Handling:

BVLF Final Cover Reconstruction

Class II Surface Impoundment Expansion 31 25 14.16-5

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1. Use appropriate handling equipment to load, move or deploy engineered turf. Appropriate handling equipment includes cloth chokers / straps, and spreader bar for loading, spreader and roll bars for deployment. Dragging rolls and / or panels on the ground surface shall not be permitted.
2. Do not fold engineered turf material. Folded material shall be rejected.
3. The installer is responsible for storage, and transporting material from storage area to installation area.

D. Damaged Engineered Synthetic Turf:

1. Damaged engineered synthetic turf will be documented by the Owner's Representative.
2. Damaged engineered synthetic turf shall be repaired, if approved by the owner's representative, in accordance with these specifications or shall be replaced at no additional cost to the Owner.

2.02 ENGINEERED SYNTHETIC TURF

- A. The engineered turf component shall meet or exceed property values listed in Table 02720-1 as an individual component and performance.
- B. Engineered synthetic turf shall be the Geosynthetic drain material Z Revetment System or equivalent.
- C. The engineered synthetic turf shall be comprised of the following components:
 1. Polyethylene monofilament yarn fibers
 2. Two polypropylene backing geotextiles
 3. Polyethylene coating with a polyethylene film extruded to the geotextile backing
- D. The polyethylene yarn shall conform to the color selected by the Owner per color coding provided under Section 1.04(A)(1).

2.03 CEMENTITIOUS INFILL COMPONENT

- A. cementitious infill shall be Hydrobinder as manufactured by Watershed Geosynthetics or equivalent. Hydrobinder is a proprietary cementitious product used as the infill component of the HydroTurf system.
- B. MATERIALS
 1. The infill material may be delivered in either pallet form of 80 lb. bags or 3000 lb. bulk bag super sacks;
 2. Cement, except as otherwise specified herein, will be a brand of Portland Cement,

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meeting ASTM C 150 and will be Type I or Type II;

3. Only one brand of cement will be used throughout the duration of this Contract;
4. The cementitious infill mix will conform to the requirements of ASTM C 387 for high strength mortars;
5. The cementitious infill mix will have a minimum 28-day compressive strength of 5000 psi as measured in accordance with ASTM C 109; and
6. Freeze-thaw properties of the HydroTurf system with the cementitious infill treated with the Catalyzed Colloidal Silicate Concrete Treatment shall have been tested in accordance to ASTM C666 with the results of 0.2% loss (avg.) at 100 cycles and <3.0% loss (avg.) at 300 cycles.

2.04 OUTFALL RIPRAP

- A. Rip-rap shall consist of hard, durable, angular stone meeting the requirements of Section 72-2.02 of the Caltrans Standard Specifications. Rip rap shall consist of Class II using Method B placement unless otherwise indicated on the plans.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify in writing that the surface on which the engineered synthetic turf will be installed is acceptable. In so doing the Installer shall assume full liability for the accepted surface.
- B. The beginning of installation means acceptance of existing conditions. The Installer shall be responsible for maintenance of the covered subgrade once installation of engineered synthetic turf begins.

3.02 PREPARATION

- A. Surface Preparation:
 1. Subgrade shall be smooth (free from ruts, depressions, etc.), uniform, firm and unyielding, and free from rocks, roots or other debris.
 2. No rocks or protrusions greater than 0.75 inch in diameter will be exposed at the subgrade surface.
 3. Approved subgrade shall be capable of supporting the weight of the product, installation equipment, and maintenance equipment.
 4. Daily evaluation shall be performed to show that no changes have occurred that would render the subgrade unacceptable.

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5. Compaction requirements may be imposed by the Engineer as required for the project.

B. Anchor Trench Preparation

1. Anchor trenches shall be excavated to the grades and dimensions as specified on the construction plans.
2. Anchor trenches shall be straight and uniform with no rough edges.
3. The inside edge of the anchor trench shall be rounded and smooth.
4. Anchor trenches shall be free of sharp objects and other deleterious material.

C. Non-Conforming Work

1. Subgrade not meeting specifications either before or during deployment of the Geosynthetic drain material, or its components, will be reported to the OWNER'S REPRESENTATIVE and corrected as required.

3.03 ENGINEERED SYNTHETIC TURF DEPLOYMENT AND INSTALLATION

A. Engineered synthetic turf shall not be deployed:

1. During precipitation;
2. In the presence of excessive moisture;
3. In areas of ponded water;
4. In the presence of excessive winds; or
5. In excessive heat or cold.

B. The engineered synthetic turf shall be deployed without damage by equipment, handling, trafficking, leakage of hydrocarbons, or by other means. The engineered synthetic turf shall not be dragged.

C. The synthetic turf is anchored to prevent movement by the wind (the Contractor is responsible for any damage resulting to or from windblown synthetic turf).

D. The synthetic turf shall be deployed smooth and free of tension (but not loose), stress, folds, ripples / wrinkles, creases, and free of contaminants such as soil, grease, fuel, etc. The turf shall be in intimate contact with the underlying subgrade.

E. The synthetic turf shall be deployed with the synthetic grass blades pointing towards the top of the slope on slopes greater than 12%.

F. The panels shall be deployed in a manner to ensure that the turf filaments are pointing upslope and in the same direction as the adjacent panel.

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- G. The engineered synthetic turf shall be secured with sandbag anchoring.
- H. Synthetic turf seaming shall be performed as follows:
1. The seam overlaps shall be 5-inch (min) and shall be shingled with the flow of water. The panel on the up-flow / upstream side shall have the overlap placed on top of the down-flow / downstream panel.
 2. Demonstrate the preparation methods and equipment utilized for removal of the salvage from the outside edge of the rolls of turf (i.e. trimming & cutting devices). Mechanical trimming and cutting devices will be utilized for salvage trimming. Box blades and knives shall not be utilized for salvage preparations. Fraying of geotextile strands when performing the removal of salvage is not acceptable.
 3. Frayed or loose edges and/or geotextile strands shall be cut off or removed.
 4. Seaming of the engineered turf component shall be performed by heat-bond welding. This is described as follows:
 - a. The DemTech 4-inch, single-wedge welder (Model No. VM-20/4/A Pro-Wedge Welder 120V, VM20 Outfitted with 100-KIT/4S/VC/A.2 Welding Kit, 4-in, 220V, S.S.) shall be used to heat-bond the seams.
 - b. Since the temperature and speed controls of the DemTech VM-20 wedge welder are variable and can be increased / decreased depending on weather and environment conditions, the temperature and speed shall be confirmed with a trial seam. This trial seam shall be field tested. Trial seams shall be performed at the being of each day and during the day when the weather (i.e., temperature, humidity, etc.) conditions change.
 - c. Trial seams shall be performed as outlined in the Geosynthetic drain material Installation Guidelines (most recent revision).
 - d. Production field seaming shall be performed and verified in the same manner as trial seams. The production field seams shall be inspected every hour at a minimum. This inspection of the field seams shall be the same as the inspection for the trial seams.
 - e. Production fusion seams shall be continuous and have no gaps.
 - f. Any damage and defects (including burnouts) that occur during production seaming will be repaired as outlined in Section 3.03(H)(5) and Geosynthetic drain material Installation Guidelines (most recent revision).
 - g. All seams not passing the visual inspection shall be repaired.
 - h. After seaming operations, the edges of the synthetic turf panels shall be sufficiently anchored with sandbags in the top of slope perimeter anchor trenches unless otherwise noted on the construction drawings.
 5. Repairs, caps and tie-ins of engineered turf shall be performed as follows:

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- a. Repairs to engineered turf shall be completed by using 4-inch (min) overlapped heat-bonded seam.
 - b. Tie-in seams along flatter slope (i.e. 15% or less) with length greater than 25 feet shall use the DemTech VM-20 single-wedge welder [Section 3.05 (H)(1)].
 - c. A hand-held Leister or other equivalent hot-air gun (with hand pressure) should be used in shorter or smaller concentrated areas (i.e., butt seams, caps or patches).
 - d. Hand leistering shall be field tested with a trial seam to confirm proper seaming in accordance with the Geosynthetic drain material Installation Guidelines (most recent revision).
- I. The top of slope anchor trenches shall be left open until seaming is completed of the engineered synthetic turf. Expansion and contraction of the engineered synthetic turf should be accounted for during installation. Prior to backfilling the top of slope anchor trench, the depth of penetration of the engineered synthetic turf into the anchor trench shall be verified by the Owner's Representative at a minimum of 100 foot spacing along the anchor trench. The anchor trench should be filled in the morning when temperatures are coolest to reduce bridging of the engineered synthetic turf.
- J. Installer shall backfill top of slope anchor trenches prior to placement of infill into the engineered synthetic turf component. This will minimize the creation of wrinkles while placing the infill. Bottom and side-slope anchor trenches shall not be backfilled until after infill placement. This will allow corrections in the field during the deployment of the engineered synthetic turf. Note that wrinkles will travel down the slopes and cannot be redistributed up slopes, so it is important that bottom and side-slope anchor trenches remain open so that pulling adjustments can be made.

3.04 CEMENTITIOUS INFILL PLACEMENT

- A. Placement of cementitious infill shall be performed as follows:
1. cementitious infill is typically delivered to the jobsite on pallets in either 3000# bulk bags (1 per pallet) or 80# bags (42 per pallet). It is delivered on a flatbed with 16 pallets (typical) per truckload.
 2. The cementitious infill shall be installed into the turf while it is in a dry state.
 3. Prior to placing the cementitious infill, the engineered turf shall be dry. If the turf is wet from rain or dew, the installer shall wait until it is dry. The installer may attempt to speed up the drying process by using a blower (i.e., leaf blower, industrial blower, etc.).
 4. cementitious infill shall not be installed in inclement, wet or rainy weather, or the threat of inclement weather. Also, the cementitious infill shall not be installed in cold weather as defined by American Concrete Institute (ACI) 306.

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5. The cementitious infill shall be placed at a minimum thickness of 7/8-inch minimum dry thickness and a 3/4-inch minimum finished thickness after hydration and curing. This thickness is achieved by placing approximately 7 lbs/sf of the dry cementitious infill over the engineered synthetic turf.
 6. The infill is to be placed / spread using a manual drop spreader, top-dresser and/or drop spreader attached to low ground pressure equipment with adequate dust control. Alternative methods can be used to spread and place the infill as approved by the Owner's Representative and/or Engineer. Contractor shall explain in detail in the pre-construction meeting the method of infill deployment to be used. The Owner's Representative and/or Engineer shall approve the method.
 7. Manual hand spreading is acceptable when equipment is not practical.
- B. The cementitious infill will need to be worked into the turfs of the engineered turf such that the turf fibers are in an upright position. This can be achieved as follows:
1. The infill shall be worked into the tuft fibers so the tuft fibers are in an upright position with the infill at a measurable 7/8-inch minimum depth in the dry state. This is typically achieved with common mechanical turf broom, power broom, shop broom, yard rakes, or greens groomer rakes.
 2. Brushing of the cementitious infill shall be performed such that the fibers of the engineered turf are upright and trapped fibers are minimal. This shall be confirmed by visual inspection. Multiple brushing passes in multiple directions may be required to achieve this.
 3. The cementitious infill may need to be placed in 2 to 4 lifts with brushing in between lifts to effectively work the material into the tufts and achieve fibers that are upright.
 4. Thickness measurements of the cementitious infill shall be taken using a caliper or equivalent device. Measurements shall be taken at a minimum frequency of 5 measurements per 1,000 sf (for smaller projects) or 20 per acre (for larger projects) of installed area.
 5. The desired cementitious infill thickness shall be achieved prior to the hydration process.
- C. The cementitious infill shall be hydrated in place as follows:
1. The hydration process shall occur on the same day as the cementitious infill placement.
 2. The infill shall be hydrated thoroughly with a light and consistent spray of water to avoid displacement of the non-hydrated infill. Estimated application rate is between 0.12 and 0.20 gallons per square foot of area. During hot temperatures and/or in dry climates, additional water may be needed.

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3. The installer shall not overhydrate the infill so that water begins to runoff and cause loss of cement infill during the process. The general objective is to soak the area to start the hydration process but not to inundate with water beyond saturation of the infill.
 4. The Owner's Representative shall visually verify that the cementitious infill has been fully hydrated, and not over hydrated. Visually observe that the top of the cementitious infill has a wet sheen (denoting saturation) but that water is not ponding on top. Also, excavate (with finger or small tool) into the cementitious infill to confirm full hydration of the section has been achieved.
 5. To improve curing, the hydrated area may be covered with plastic sheeting.
 6. If cold weather temperatures are expected, the hydrated area should be covered with heated blankets and plastic sheeting. Procedures in ACI 306 shall be followed for cold weather cementitious infill installation.
 7. The cementitious infill shall harden within 24 hours following hydration and shall reach its maximum compressive strength at 28 days. If the cementitious infill has not hardened in 24 hours, it will need to be removed and replaced.
 8. Personnel access on the HydroTurf shall be prohibited following the hydration of the cementitious infill until it sets up hard.
- D. Once hydration is completed and the cementitious infill has set up (min. 24 hours); backfill and compaction of the remaining perimeter anchor trenches may be performed. The cementitious infill layer may be placed using appropriate equipment capable of completing the work;
- E. Manual hand spreading and raking is acceptable when mechanical equipment is not practical;
- F. For projects where Catalyzed Colloidal Silicate Concrete Treatment is required. Once hydration has been completed, and the cementitious infill has cured for a minimum of 24 hours and has fully set up; the cementitious infill Catalyzed Colloidal Silicate Concrete Treatment shall be sprayed onto the HydroTurf System in accordance with Section 03 05 59 of these Specifications.

3.05 CONSTRUCTION QUALITY ASSURANCE

- A. CQA PERSONNEL shall verify the following:
1. INSTALLER shall explain in detail in the pre-construction meeting the method of cementitious infill deployment;
 2. Installation of cementitious infill will only be performed by a Watershed Geosynthetics' trained installer;

SECTION 31 25 14.16
GEOSYNTHETIC OVSIDE DRAINS

3. cementitious infill shall not be installed in inclement, wet or rainy weather, or the threat of inclement weather;
4. The cementitious infill shall not be installed in freezing temperatures;
5. The cementitious infill will be installed into the turf while it is in a dry state;
6. The cementitious infill will be worked into the tufts so the tufts are in an upright position;
7. The cementitious infill infill will be placed dry at a minimum thickness of 7/8 inch;
8. Do not backfill anchor trenches until turf has been infilled with cementitious infill infill;
9. The hydration process must occur the day of the cementitious infill infill placement;
10. The desired cementitious infill infill thickness will be achieved and confirmed by measurements prior to the hydration process;
11. The cemented infill is hydrated thoroughly however care must be taken to avoid displacement of the non-hydrated infill;
12. Hydration shall start at the upstream or upslope portion and move downstream or downslope;
13. The objective is to soak the area to start the hydration process but not to inundate with water beyond saturation;
14. Once hydration is completed as described, backfill and compaction of the anchor trenches should take place;
15. cementitious infill that does not set up within 24 hours on account of improper hydration shall be removed and replaced;
16. Cold weather installation of cementitious infill shall be performed in accordance with American Concrete Institute (ACI) - 306R-10 Guide to Cold Weather Concreting; and,
17. For projects where Catalyzed Colloidal Silicate Concrete Treatment is required. Once hydration has been completed, and the cementitious infill has cured for a minimum of 24 hours and has fully set up; the cementitious infill Catalyzed Colloidal Silicate Concrete Treatment shall be sprayed onto the HydroTurf System in accordance with Section 03 05 59 of these Specifications.

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GEOSYNTHETIC OVERSIDE DRAINS

3.06 EQUIPMENT ON THE ENGINEERED SYNTHETIC TURF

- A. Construction equipment on the deployed synthetic turf shall be minimized to reduce the potential for synthetic turf material puncture. Small equipment such as generators shall be placed on scrap synthetic turf / geosynthetic material (rub sheets) above engineered synthetic turf.
- B. During Construction:
 - 1. On slopes exceeding 15%, no equipment will be allowed until cementitious infill is in place.
 - 2. On slopes less than 15%, ATV type vehicles and/or rubber tracked skid steer machines will be allowed prior to infill placement if the tire / track ground pressure is less than 5 psi.
 - 3. Equipment operators shall inspect equipment rubber tires or tracks for sharp protrusions from foreign matter or tire/track damage, embedded rocks, or other foreign materials protruding from tires/track prior to driving on the synthetic turf. Equipment travel paths driven on synthetic turf shall be as straight as possible with no sharp turns, sudden stops or quick starts.
 - 4. Damage caused by having equipment on the engineered synthetic turf (i.e., tears, rips, punctures, wrinkles, ripples, movement, etc.) shall be the responsibility of the installer to repair.
- C. Post installation, no equipment shall be allowed on the Geosynthetic drain material until cementitious infill is fully cured for 28 days:
 - 1. Driving should be limited and only in areas where the subgrade under the geosynthetic drain material is well-compacted, firm and unyielding.
 - 2. Drivability tire / track (ground) pressures should be limited to less than 35 psi. Rubber tire and/or tracked vehicles or equipment only.
 - 3. On slopes flatter than 10%, allowable ground pressures may only be increased with the written approval of the POR.
- D. Any activity that may be identified during the course of construction by the OWNER'S REPRESENTATIVE, or CQA PERSONNEL as being a possible danger to the integrity of the geosynthetic drain material will prohibited regardless of any prior approval.

**SECTION 31 25 14.16
GEOSYNTHETIC OVERSIDE DRAINS**

Table 02720-1
Property Values for Engineered Synthetic Turf Component

Property	Test Method	Required Value
Yarn	ASTM D1577	Polyethylene Monofilament
Tufted Pile Height	ASTM D5823	1.25 ± 0.25 inches
Pile Weight	ASTM D5848	18.5 ± 2.0 oz/yd ²
Weight of Polyethylene Coating and Film	ASTM D5848	18.4 ± 2.0 oz/yd ²
Total Weight	ASTM D5848	43 ± 4.0 oz/yd ²
Yarn Tensile	ASTM D2256	15 lbs (min)
CBR Puncture	ASTM D6241	700 lbs (min)
Wide Width Tensile (MD / XMD)	ASTM D4595	1000 lb/ft. (min)
Aerodynamic Evaluation	GTRI ¹ Wind Tunnel	120 mph
UV Resistance and Stability of Engineered Synthetic Turf	ASTM G147 ASTM G7	>60% Retained Tensile Strength at 100-year exposure (projected)
Steady State Hydraulic Overtopping	ASTM D7277 / ASTM D7276	25 ft/sec velocity
Manning's N Value	ASTM D7277 / ASTM D7276	0.017 – 0.020
Interface Friction (Low Confining Stress Against Concrete Sand)	ASTM C5321	22° min. (peak)
Typical Roll Dimensions	12-ft (3.66-m) Wide x 300-ft (91.4-m) Long (Roll Lengths may vary ±3%)	
Roll Area (approximate)	3600 ft ² (334.5 m ²)	

1 Georgia Tech Research Institute

- END OF SECTION -

DIVISION 33 UTILITIES
SECTION 33 05 33
HDPE PIPE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes the following:
1. This section applies to the installation of high-density polyethylene (HDPE) pipe, HDPE pipe fittings and appurtenances in locations shown on the drawings.
- B. Related Documents:
1. Drawings and general provisions of the Subcontract apply to this Section.
 2. Review these documents for coordination with additional requirements and information that apply to work under this Section.
- C. Related Sections:
1. Section 01300 Submittals
 2. Section 02540 Air Testing
 3. Section 31 23 16.13 Trenching
 4. Section 33 51 19.13 Vertical Landfill Gas Wells
 5. Section 33 51 19.14 Landfill Gas Extraction Wellheads

1.02 REFERENCES

- A. The American Society for Testing and Materials (ASTM), latest editions:
1. American Society for Testing and Materials (ASTM):
 2. ASTM A536-84(2014) - Standard Specification for Ductile Iron Castings
 3. ASTM D638-14 - Test Method for Tensile Properties of Plastics.
 4. ASTM D790-10 - Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 5. ASTM D1238-13 - Test Method for Flow Rates of Thermoplastic by Extrusion Plastometer.
 6. ASTM D1248-12 - Specification for Polyethylene Plastics Molding and Extrusion Materials.
 7. ASTM D1505-10- Test Method for Density of Plastics by Density-Gradient Technique.
 8. ASTM D1693-13 - Test Method for Environmental Stress - Cracking of Ethylene Plastics.
 9. ASTM D2122-15 - Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings.
 10. ASTM D2513-14e1 - Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings.

11. ASTM D2837-13e1 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.
12. ASTM D3261-12e1 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
13. ASTM D3350-14 - Polyethylene Plastic Pipe and Fittings Material.
14. ASTM F1055-13 - Electrofusion Type Polyethylene Fittings.
15. American Water Works Association (AWWA):
16. AWA C207-13 Steel Pipe Flanges for Waterworks Service—Sizes 4 In. Through 144 In.
17. American Society of Mechanical Engineers/American National Standards Institute (ASME/ANSI)
18. ASME/ANSI B16.5 - 1996 - Pipe Flanges and Flanged Fittings

1.03 DEFINITIONS

- A. Standard Dimensional Ratio (DR): The actual outside pipe diameter divided by the wall thickness.

1.04 SUBMITTALS

- A. Submittals shall comply with Section 01 33 00 of these Specifications.
- B. Prior to the delivery of any HDPE pipe to the Site, Contractor shall submit to Engineer for review and approval complete, detailed shop drawings of all HDPE pipe and fittings, a list of materials to be furnished, the name of the pipe manufacturer, and the manufacturer's recommendations for handling, storage, and installation, within 10 days prior to installation.
- C. Contractor shall also submit the pipe manufacturer's certification of compliance with the Specifications, including certification that stress regression testing has been performed in accordance with ASTM D2837, for all HDPE pipe materials delivered to the Site.
- D. In addition to the certification cited above, Contractor shall submit in writing the following documentation of the pipe manufacturer on the raw materials used to manufacture the pipe and fittings:
 1. Certificate of compliance stating the specific resin, its source, and the information required by ASTM D3350 or F714; if in-plant blending of the resin is performed, the pipe manufacturer shall provide a certificate of compliance stating that the blended resin meets the requirements of ASTM D3350 or F714.
 2. Certificate of compliance stating that no recycled resin was used in manufacturing the pipe except for a small percentage (i.e., less than 10 percent) of resin generated in the pipe manufacturer's own plant from production using the same resin as the recycled material.
 3. Certification that the pipe meets the minimum physical property requirements.

1.05 QUALITY ASSURANCE

- A. Source Quality Control:

1. If Manufacturer’s test data is inadequate or unavailable, Engineer reserves the right to reject or require additional tests to satisfy material requirements. Costs of these tests shall be borne by Contractor.
- B. Work shall comply with appropriate codes and standards of organizations for handling, fusion, and underground installation of low-pressure polyethylene pipe, including but not limited to:
 1. AGA
 2. ANSI
 3. ASME
 4. ASTM
 5. PPI

1.06 DELIVERIES, STORAGE, AND HANDLING

- A. Pipe Storage:
 1. Store or stack pipe to prevent damage from marring, crushing or puncture. Limit maximum stacking height to 6 feet or manufacturer’s maximum recommended height, whichever is less.
 2. Store in accordance with manufacturer’s recommendations.
- B. Pipe handling:
 1. Protect pipe from excessive heat or harmful chemicals.

PART 2 - PRODUCTS

2.01 PHYSICAL PROPERTIES OF HDPE PIPE RESIN

- A. Density: ASTM D1505, not less than 0.941 - 0.955 gm/cu cm.
- B. Melt Flow: ASTM D1238 - Condition E, not greater than 0.15.
- C. Flexural Modulus: ASTM D790, 110,000 to less than 160,000 psi.
- D. Tensile Strength at Yield: ASTM D638, 3,000 to less than 3,500 psi.
- E. Environmental Stress Crack Resistance (ESCR): ASTM D1693 - Condition C, shall be in excess of 5,000 hrs with zero failure.
- F. Hydrostatic Design Basis: ASTM D2837, 1600 psi at 23°C.
- G. HDPE pipe shall also conform to the requirements of ASTM D3261 and ASTM D3350.
- H. HDPE pipe shall be homogeneous throughout, uniform in color, and free of cracks, holes (except where specified), foreign materials, blisters, or deleterious faults.

- I. HDPE pipe carbon black content, as determined by ASTM D1603, shall be at least 2.0 percent.
- J. HDPE pipe shall contain no recycled compound except that generated in the manufacturer's own plant and from resin of the same specification as the raw material supplier.

2.02 HDPE PIPE

- A. High performance, high molecular weight, high density polyethylene pipe (type PE 4710 resin).
 - 1. ASTM D1248 (Type III, Class C, Category 5, P34)
 - 2. ASTM D3350, minimum cell classification value 345434C.
 - 3. Standard dimension ratio: See Drawings.
 - 4. Marking: Intervals of 5 ft or less
 - Manufacturer's name or trademark
 - Nominal pipe size.
 - Type of plastic resin (i.e., PE 4710)
 - Standard dimension ratio (i.e., SDR-17).
 - ASTM D2513.
 - Extrusion date, period of manufacture or lot, or batch number.
- B. Dimensions:
 - 1. Conform to standard dimensions and tolerances of ASTM D2513.

2.03 HDPE PIPE AND PIPE FITTINGS

- A. Fittings from polyethylene compound having cell classification equal to or exceeding compound used in pipe to insure compatibility of polyethylene resins.
- B. Polyethylene fittings shall be molded for sizes 12-inch and smaller and shall be fabricated from polyethylene pipe for sizes 14-inch and larger by means of thermal butt-fusion. Extrusion welds on fittings will not be allowed. The ends of the fabricated fittings shall not be trimmed to match the pipe section to which they are going to be joined. All polyethylene fittings shall have the same or higher pressure rating as the pipe when installed in accordance with the latest technical specifications.
- C. Contractor shall provide all HDPE pipe and fittings having the nominal diameters specified herein and SDR as specified on the drawings.
- D. HDPE pipe shall be supplied in standard laying lengths not exceeding 50 feet.
- E. All HDPE pipe and fittings shall comply with ASTM F714 and ASTM D3350.
- F. All HDPE pipe and fittings shall be polyethylene Type III piping manufactured from resin with a cell classification of 345464 C/E per ASTM D3350. The pipe shall have a minimum hydrostatic design basis rating of 1,600 psi (ASTM D2837).

- G. HDPE pipe shall be furnished non-perforated or perforated as specified on the Drawings.
- H. HDPE pipes and fittings shall be homogeneous throughout and free of visible cracks, holes (except as noted on the Drawings), blisters, bubbles, undispersed raw materials, or any foreign inclusions or other deleterious effects.
- I. Fittings at the ends of pipes shall consist of HDPE end caps unless indicated otherwise on the Drawings.
- J. Pipe elbows shall be manufactured to the angle specified on the Drawings. Contractor shall allow for a minimum 4-week lead time during procurement of custom pipe fittings.
- K. Extrusion welds will not be allowed.
- L. Pressure rating of fittings shall be equal to or greater than pressure rating of pipe.
- M. Branch saddle connections are strictly prohibited unless approved by the Engineer.

2.04 PIPE COUPLINGS

- A. Joints shall be thermal butt-fusion, except where connecting to unions, valves, and equipment with connections that may require future disassembly.
- B. No mechanical couplings shall be used unless shown on the Drawings.
- C. Where required, provide HDPE blind flange adapters, molded stub ends, and molded end caps and other fittings in accordance with the drawings.
- D. 150-lb carbon steel or convoluted epoxy coated ductile iron backup rings for flanged connections as recommended by manufacturer.
- E. Type 316 stainless steel hex head nuts and bolts, and accompanying flat washers.
- F. Viton full-face flange gaskets.
- G. Flanges and bolt patterns consistent with ANSI B16.5/AWWA C207/ASTM A536, as recommended by manufacturer.

2.05 FABRICATED FITTINGS

- A. Provide fabricated or molded fittings as shown on the drawings.

PART 3 - EXECUTION

3.01 GENERAL

- A. When shipping, delivering, and installing pipe, fittings and accessories, do so to ensure a sound, undamaged installation.

- B. Provide adequate storage for all materials and equipment delivered to the job Site.
- C. Handle and store pipe and fittings in accordance with the manufacturer's recommendations.

3.02 FIELD QUALITY CONTROL

- A. Pipe may be rejected for failure to conform to Specifications, or for:
 - 1. Fractures or cracks passing through pipe wall, except single crack not exceeding two (2) inches in length at either end of pipe which could be cut off and discarded. Pipes within one shipment will be rejected if defects exist in more than 5% of shipment or delivery.
 - 2. Cracks sufficient to impair strength, durability, or serviceability of pipe.
 - 3. Defects indicating improper proportioning, mixing, and molding.
 - 4. Damaged ends, where such damage would prevent making satisfactory joints.
- B. Acceptance of fittings, stubs, or other specifically fabricated pipe sections shall be based on visual observation by the Engineer at the Project site and documentation that they conform to these Specifications.

3.03 INSTALLATION

- A. Placing and Laying pipe:
 - 1. All HDPE pipe and fittings shall be installed in accordance with the manufacturer's recommendations. Perform trenching and backfilling in accordance with Section 31 23 16.13 Trenching.
 - 2. Foreign material shall be removed from the interior of all pipe and fittings prior to welding.
 - 3. Do not push or pull pipe and fittings over sharp projections, drop, or have objects dropped on it.
 - 4. Provide maintenance of all such material and equipment.
 - 5. Follow the manufacturer's recommendations when hauling, unloading, and stringing of the pipe.
 - 6. Inspect for defects before installation.
 - 7. Any piping showing kinks, buckles, cuts, gouges, or any other damage which in the opinion of the Owner will affect performance of the pipe must be removed from the Site.
 - 8. Replace material found to be defective before or after laying with sound material without additional expense to the Owner.
 - 9. All pipe and fittings shall be laid or placed to the lines, grades and elevations, as shown on the Drawings.
 - 10. No pipe shall be placed until the Engineer has approved the bedding conditions.
 - 11. Blocking under piping shall not be permitted unless specifically accepted by the Engineer for special conditions.

12. Place 60-mil HDPE geomembrane rub sheet beneath pipe joints. Rub sheet shall measure at least 2-foot by 2-foot in area.
13. Pipe boots to be secured to pipe by extrusion welding.
14. Perform trenching and backfilling in accordance with Section 31 23 33 Trenching and Backfilling.
15. Pipes and fittings shall be carefully lowered into trench to limit stress to pipes, fittings, and joints.
16. Pipe and fittings shall be installed so that there will be no deviation at the joints and so that inverts present a smooth surface. Pipe and fittings that do not fit together to form a tight fitting joint are not permitted.
17. Pipes shall be installed at the locations and to the required lines and grades shown in the Construction Drawings and provided in these Specifications, using an approved method of control. The ENGINEER has the authority to order the removal or relaying of pipe laid contrary to the specifications, her/his instructions, or during her/his absence.
18. Excavations shall be maintained free of water during the progress of the work. No pipes shall be laid in water nor shall there be any joints made up in water. All slides or cave-ins of the trenches or cuts shall be remedied to the satisfaction of the ENGINEER.
19. Cleanliness of installed pipe and fitting interiors shall be maintained throughout the Work. Cap pipe sections longer than single joint on both ends during placement, except during fusing operations.
20. All adjustments to the line and grade of pipe laid on earth foundation shall be done by scraping away or placing compacted fill under the barrel of the pipe, and not by blocking or wedging the pipe. In all cases, the trench under the joint shall be excavated to permit an even bearing surface for the barrel of the pipe.
21. Fittings shall be installed as required and in accordance with the Construction Drawings and Specifications. The installation of fittings after the pipeline has been laid will not be permitted without written approval from the ENGINEER. In such cases, complete details pertaining to the proposed type of fittings and the installation procedure shall be submitted by the CONTRACTOR to the ENGINEER for review before approval will be considered.
22. Approval by the ENGINEER is required prior to changing the location of any of the Work due to field conditions. Changes in pipe sizes are prohibited without a written consent from the ENGINEER.
23. All installed pipe shall form completely connected systems, including connections to valves and appurtenances specified in other sections, to result in a satisfactorily operating installation.

3.04 FUSION WELDING PIPE

- A. Join the polyethylene pipe by the method of thermal butt or side wall fusion, outlined in ASTM D2657. Perform fusion joining of pipe and fittings in accordance with the procedures established by the pipe manufacturer. Of particular importance is the use of proper interface pressures and heater plate temperatures. Ensure that shavings generated during butt surface preparation are cleaned from interior of piping prior to fusing.

- B. Use fusion pressures, temperatures, and cycle times according to pipe manufacturer's recommendations. Use personnel adequately trained and qualified in the technique involved.
- C. Do not perform pipe fusion in water when trench conditions are unsuitable for the work. Keep water out of the trench until joining is completed. Secure open ends of pipe and close valves when work is not in progress, so that no trench water, earth, or other substance will enter the pipe or the fittings. Plug or cap or valve pipe ends left for future connections.
- D. Clear welding and grade sites, if necessary, to provide enough space for pipe storage and fusion. Keep the Site free of rocks, stumps, and debris which could cut, scar, or gouge the pipe. In order to allow the joining operation to continue in adverse weather conditions, a shelter may be required for the joining machine. Particular caution should be exercised to prevent the pipe from becoming wet, and to prevent the heater plate from coming in contact with water.
- E. Polyethylene Fusion Qualification: All pipe fusion must be performed by a supplier, a factory supplied and/or certified fusion operator.
 - 1. Each individual performing fusion joining shall have at least one (1) year of experience in the use of the fusion procedure.
- F. Join pipe sections at ground level to a maximum length of 400 feet, or a length recommended by the manufacturer such that maximum allowable stress, when pulling the pipe into position alongside the trench, is not exceeded. Use appropriate materials and equipment, as recommended by the HDPE pipe manufacturer, when pulling butt fused pipe sections alongside the trench to prevent pipe damage.
- G. For summertime installations, it may be necessary to provide a slightly longer length of HDPE pipe when connections are to be made between two fixed points or structures to compensate for contraction of the pipe in a cooler trench bottom. The additional pipe length requirements shall be in accordance with the HDPE pipe manufacturer's instructions.
- H. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.
- I. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.
- J. Do not subject pipe to strains that will overstress or buckle pipe or impose excessive stress on joints.
- K. Before butt fusing pipe, each length shall be observed for presence of dirt, sand, mud, shavings, and other debris or animals. Remove all materials from the inside of the pipe.
- L. At end of each working day, cover open ends of fused pipe. Cap to prevent entry by animals or debris.
- M. Use compatible fusion techniques when polyethylene pipes of different melt indexes are

fused together. Refer to manufacturer's specifications for compatible fusion.

3.05 FLANGE JOINING:

- A. Use on flanged pipe connection sections.
- B. Connect slip-on backup flanges with nuts and bolts.
- C. Butt fuse flange adapters to pipe.
- D. Observe the following precautions when connecting flanged joints.
 - 1. Align flanges or flange/valve connections to provide a tight seal. Viton full-face gaskets are required for flange/valve connections.
 - 2. Place U.S. Standard round washers as may be required on some flanges per manufacturer's recommendations. Bolts shall be lubricated in accordance with manufacturer's recommendations.
 - 3. Tighten flange bolts in sequence and in accordance with manufacturer's recommendations. CAUTION: Do not over-torque the bolts. CONTRACTOR shall be required to use a torque wrench to secure flanged connections.
- E. Pull bolt down by degrees to uniform torque in accordance with manufacturer's recommendations.

3.06 PIPE PLACEMENT:

- A. Grade control equipment shall accurately maintain design grades and slopes during installation of pipe. Slope may not vary by more than 0.1% from the design slope.
- B. Maximum lengths of fused pipe to be handled as one section shall be placed according to manufacturer's recommendations as to pipe size, pipe SDR, and topography so as to not cause excessive gouging or surface abrasion; but not to exceed 400 feet.
- C. Notify ENGINEER prior to installing pipe into trench and allow time for ENGINEER'S observation.
- D. Correct irregularities found during inspection.
- E. Complete connections within trench whenever possible to prevent overstressed connections.
- F. Allow pipe sufficient time to adjust to trench temperature prior to any testing, segment connections, or backfilling activity.
- G. Install reducers adjacent to laterals or tees.
- H. Place in trench by allowing at least 12 inches/100 feet for thermal contraction and expansion.
- I. Coordinate construction of header lines near access roads with OWNER to limit interruptions to normal landfill operations.

3.07 PIPE TESTING

- A. Test pipe sections in accordance with Section 33 05 04.41 Air Testing.

3.08 TOLERANCES

- A. The Contractor shall be responsible for installing all HDPE piping within the following tolerances:
 - 1. Horizontal tolerance: 0.5 ft maximum
 - 2. Vertical tolerance: 0.1 ft maximum
 - 3. Maintain positive grades - no reverse slopes allowed at any location.
 - 4. Slope may not vary by more than 0.1% from the design slope.
- B. A Surveyor licensed in the State of California shall prepare as-built survey record drawing to confirm that the tolerances are as required in accordance with Section 01 32 16 Survey and Layout.

- END OF SECTION -

AIR TESTING PIPING SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. The Contractor shall furnish all labor, materials, equipment, tools, and appurtenances required to test landfill gas and landfill gas related piping systems.
2. Contractor is responsible for repairing damage caused to pipe or related equipment as a result of the pipe test. All damaged items must be replaced or repaired to the satisfaction of the Owner.

B. Related Documents:

1. Contract Documents – Construction Agreement
2. Contract Documents – Instructions to Bidders.
3. Contract Documents – Bid Form.
4. Drawings and general provisions of the Subcontract apply to this Section.
5. Review these documents for coordination with additional requirements and information that apply to work under this Section.

C. Related Sections:

1. Section 01 33 00 Submittal Procedures
2. Section 33 41 16.19 HDPE Pipe

1.02 REFERENCES (NOT USED)

1.03 SUBMITTALS

- A. Contractor shall submit a plan detailing how pipe tests will be conducted including a list of all equipment and materials that will be utilized. The plan shall indicate how, if any, the plan deviates from this Specification.
- B. Contractor Equipment Certifications. All testing equipment shall be certified and calibrated.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide air compressor flanges, caps, gauges, bulkheads and monitoring apparatus as necessary to complete the pressure test.

PART 3 - EXECUTION

AIR TESTING PIPING SYSTEMS

3.01 PREPARATION

- A. Commence test procedures when following conditions have been met.
 - 1. Pipe section to be tested is clean and free of dirt, sand or other foreign material.
 - 2. Seal pipe ends with fused end caps or blind flanges.
 - 3. Add pressure slowly.
 - 4. Pressurizing equipment shall include regulator set to avoid over-pressurizing and damaging otherwise acceptable line.
- B. Provide necessary piping connections between section of line being tested and air supply, together with test pressure equipment, meters, pressure gauge, and other equipment, materials, and facilities necessary to make specified tests.
- C. Furnish and install bulkheads, flanges, valves, bracing, blocking or other temporary sectionalizing devices that may be required.

3.02 TESTING EQUIPMENT

- A. Provide equipment for this testing procedure.
- B. Testing Equipment:
 - 1. Polyethylene flange adapter with steel blind flange.
 - 2. Temperature gauge (0°C to 100°C) tapped and threaded into blind flange.
 - 3. Pressure gauge (0 to 15 psig).
 - 4. Inlet valve to facilitate air pressure to pipe.
 - 5. Ball valve to release pipe pressure at test completion.
 - 6. Polyethylene reducers to be used to adapt test flange to size of pipe being tested.
 - 7. Air compressor shall provide adequate air supply for testing.
 - 8. Pressurizing equipment shall include a regulator set to avoid over-pressurizing and damaging otherwise acceptable pipe.
- C. Provide verification and results of gauge calibration performed less than 60 days prior to test.

3.03 TESTING

- A. Owner shall be given 24-hr notification prior to test.
- B. Appropriate safety precautions must be in-place.
- C. Pipe Test Segments:
 - 1. Butt-fusion welded pipe segments.

AIR TESTING PIPING SYSTEMS

2. Maximum test section length: 2,000 lineal feet.
3. Provide blind flange with test apparatus on one end and fused cap or blind flange assembly on opposite end.

D. Environment:

1. Bury test segment or lay test segment on ground surface and allow it to reach ambient temperature before test.
2. Perform test during period when pipe segment will be out of direct sunlight to minimize pressure changes as a result of temperature fluctuations.

E. Test:

1. Apply test pressure of 10 psig to test segment.
2. Observe test pressure for 1-hour.
3. Correct pressure drop for temperature change.
4. Pressure drop over 1-hour period should not exceed 1%.
5. If retest is necessary, allow pressure to relax to 0 psig for a minimum of 8 hours prior to retest.

F. Test Failure:

1. If retest is necessary, allow pressure to relax to 0 psig prior to retest.
2. Perform the following when pipe segment fails test.
 - a. Check entire length of pipe and fusion welds for cracks, pinholes, perforations or other possible leakage points.
 - b. Check blocked risers and capped end for leakage and check gaskets at blind flanges.
3. Verify leaks by applying soap water solution and observe for bubble formation.
4. Repair pipe and fused joint leaks by cutting out leak area and re-welding suitable replacement segments.
5. After leaks are repaired, retest.

G. Remove temporary sectionalizing device after tests have been completed.

3.04 TEST REPORTING

1. Each test shall be reported in writing to OWNER with 24 hours of completing each test. Provide report on Attachment 1 included with Air Testing Form.

B. Include following information if failure occurs:

1. Location of failure segment.
2. Nature of leaks.
3. Details of repairs performed.

DIVISION 33 UTILITIES

SECTION 33 05 33.13

AIR TESTING PIPING SYSTEMS

4. Retest results.

DIVISION 33 UTILITIES

SECTION 33 05 33.13
AIR TESTING PIPING SYSTEMS

AIR TESTING FORM
ATTACHMENT 1 TO SECTION 33 05 33.13
HDPE PIPE PRESSURE TEST REPORT

Project Name/No.: _____ Date: _____

Contractor: _____ Time: _____

Person Performing Tests: _____

Description/Location of Test Segment: (Pipe Diameter, Length, and SDR's)

Location of Pipe Test Segment
Station From: _____ Station To: _____

- T_i = Initial Temperature = _____ °F
- P_i = Initial test pressure = _____ psig
- P_c = Initial Pressure in psig corrected for temperature (T_i) at time "t"
- t = Time in minutes from initiation of test
- T_t = Temperature in °F at time 't'
- P_t = Test pressure in psig at time 't'
- P_c =
$$\frac{(P_i + 14.7)(T_t + 273)}{(T_i + 273)} - 14.7$$

Percent Pressure Drop = $\frac{P_c - P_t}{P_c} \times 100$

Time (min)	T _t Temp Reading (°F)	P _t Gauge Pressure (psig)	P _c Corrected Pressure (psig)	Pressure Drop (%)
0				
20				
30				
40				
50				
60				

Pass/Fail: _____ Retest (yes/no) _____

Description/Nature of leaks and repair of retest segment:

- END OF SECTION -

DIVISION 26 ELECTRICAL
SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes providing and installing all electrical requirements for leachate extraction and transfer system as shown on the Construction Drawings, as specified herein, and as needed for a complete and operational installation.
- B. Any apparatus, appliance, material, or work not shown on the Construction Drawings, but mentioned in the Specifications, or vice versa, or accessories necessary to make the Work complete in all respects and ready for operation, even if not particularly specified, shall be furnished, and installed by the Contractor without additional expense to the County.
- C. The Construction Drawings are diagrammatic and do not show all offsets, bends, elbows, or other specific elements, which may be required for proper installation of the Work. Such accessories and routing will be provided to complete the Work at no additional cost to the County. The right is reserved to make any reasonable changes in outlets, lighting, or equipment locations, prior to rough-in, without any additional cost to the County.

1.02 WORK INCLUDED:

- A. Those items included under this Section of Specifications shall include, but not necessarily be limited to, the following:
 - 1. Service pole, disconnect, metering, and connection from local utility.
 - 2. Overhead and underground 480V distribution from 480V utility service pole.
 - 3. Power distribution equipment, including panelboard, fused disconnect switches, and transformers.
 - 4. Feeders and branch circuit wiring, wiring devices, and connections to all equipment requiring electrical service.
 - 5. Motor controls (e.g., starters, control panels, etc.).

6. Conduits and wiring between the equipment and controls of the leachate collection sump pump(s), the leachate storage tank(s), and other equipment and controls.
 7. Liquid level switches and controllers for leachate pump.
 8. Equipment support/foundation.
 9. All other incidentals materials and equipment required to provide a complete power service connection to the control panels.
 10. Installation of electrical conductors in trenches from electrical power supply to the pump control panel and/or starters.
 11. Grounding.
 12. All required incidental work, such as excavating, trench backfilling, compaction and testing of backfill materials.
 13. All other electrical work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the Construction Drawings.
 14. Electrician for all testing and start-up assistance.
- B. It is the intent of the Construction Drawings and Specifications that electrical systems be complete and, except as otherwise noted, ready for operation.

1.03 RELATED SECTIONS

- A. Section 11000 - Equipment
- B. Section 16100 - Basic Electrical Materials and Methods
- C. Section 16500 Lighting
- D. Section 16910 - Control Panel

1.04 REFERENCES

- A. Work and materials will conform to the latest rules of the National Electrical Code, regulations of the State Fire Marshal, and all applicable local and state codes. Nothing in these Specifications will be construed to permit work not conforming to the most stringent applicable codes.

- B. The current adopted editions of the following codes and reference standards will also apply.
1. American National Standards Institute (ANSI)
 2. American Society for Testing and Materials (ASTM)
 3. California Electrical Code
 4. Certified Ballast Manufacturers (CBM)
 5. Insulated Power Cable Engineer Association (IPCEA)
 6. International Electrical Testing Association (NETA)
 7. National Electrical Code (NEC)
 8. National Electrical Manufacturers Association (NEMA)
 9. Underwriters Laboratories, Inc. (UL)
 10. Uniform Building Code (UBC)
 11. Uniform Fire Code (UFC)
 12. Uniform Mechanical Code (UMC)

1.06 SEISMIC REQUIREMENTS

- A. All electrical equipment shall be designed, constructed, and installed in accordance with all applicable codes for the seismic requirements for the project site region. The Contractor shall perform any necessary calculations and/or determinations required to justify compliance with the seismic requirements.

1.07 SUBMITTALS

- A. Submittals shall consist of detailed shop drawings, specifications, catalog “cuts,” and data sheets containing physical and dimensioned information, performance data, electrical characteristics, materials used in fabrication and material finish, and shall be furnished by the Contractor in accordance with Section 01300 - Submittals. Include seismic data regarding installation and seismic-withstand certification for all electrical equipment weighing more than 500 pounds.
- B. The Contractor shall submit the following Manufacturer and product data to the Resident Engineer for review in accordance with Section 01300 – Submittals. The

Contractor shall obtain the Resident Engineer's acceptance of applicable submittals before material purchase or shipment.

1. Leachate Control Sump Pump Control panel enclosures and panel station supports
2. Control panel components (displays, relays, indicator lights, selector switches. etc.)
3. Motor Starters
4. Level Controls
5. Disconnect Switches
6. Service Entrance Components
7. Overhead distribution and pole design documentation

1.08 PERMITS

- A. Provide all necessary notices, obtain all permits and pay all government taxes, fees, and other costs in connection with this Work. Obtain all required certificates of inspection for work and deliver same to the County before final acceptance and final payment.

1.09 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for performance of the work of this Section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Materials: Materials shall be new and shall be delivered to the Site in the original packaging.
- B. Wire and Cable: Deliver wire and cable to the Site in unbroken packages or reels.

PART 2 - PRODUCTS

2.01 NAMEPLATES

- A. Construction: Laminated phenolic plastic (white front and back), black core with lettering etched through outer covering; use 3/16-inch-high lettering at control

stations, thermal overload switches, receptacles, switches, and similar devices, where nameplate is attached to device plate; use 1/4-inch-high lettering at all other locations, unless otherwise specified or detailed; engraving directly on device plates with black enamel-filled lettering is acceptable in lieu of separate plastic nameplates. Nameplates may also be of nonferrous metal, 0.03-inch-thick minimum, die stamped.

- B. Inscription: If detailed on the Construction Drawings, use inscription exactly as shown; otherwise, describe adequately function or use of equipment involved.
 - 1. For Power Receptacles: Indicate voltage and phase (e.g., 120V, 1PH).
 - 2. For Motors: Make nameplate on motor of particular machine exactly the same as that for respective starter, disconnect switch, and push-button station (e.g., Fan RF-1).

2.02 FINISHES

- A. Factory Finish: Pull and junction boxes, panel board cabinets, equipment enclosure, and so on, factory finished as follows:
 - 1. Surface-Mounted Boxes: One prime coat over galvanizing, one coat of light-gray-synthetic enamel or lacquer.
 - 2. Flush-Mounted Boxes: Galvanized only.
 - 3. Surface-Mounted Fronts: One prime coat, one coat of light-gray-synthetic enamel or lacquer.
 - 4. Flush-Mounted Fronts: Prime coat only.
- B. Equipment Enclosures: Transformer cases, high-voltage equipment including switchgear, special equipment enclosures, and other enclosures, shall be manufacturer's standard unless otherwise specified.
- C. Field Painting:
 - 1. Unless otherwise specified herein and in other Sections of this Specification, or indicated on the Construction Drawings, all exterior-exposed metal (except electroplated steel, stainless steel, or anodized aluminum) shall be painted.
 - 2. Paint all exposed ferrous metals that are not galvanized or factory finished. Use one coat of approved asphaltic aluminum paint over prime coat.

3. Where field painting of metals is required, metal to be painted shall be cleaned, pretreated, primed, and given two (2) finish coats of paint as follows:
 - a. Cleaning: Remove rust, scale, grease, oil dirt, preservative coatings, or other deleterious matter. Treat all bare and clean metal with primer pretreatment, before priming.
 - b. Primer:
 - 1) Steel and Iron (Not Galvanized): Red Base Primer or Basic Silico Chromate Primer.
 - 2) Aluminum: Zinc Chromate Primer.
 - 3) Galvanized Steel and Nonferrous Metals: Zinc Dust Oxide Primer. Apply second coat as soon as possible after priming to provide for proper bonding to primer coat.
 - c. Finish Coats: One coat of exterior synthetic enamel undercoated and one coat of industrial epoxy enamel, color to be light gray.
4. Do not paint the following:
 - a. Transformer cases.
 - b. Lighting fixtures and factory-finished fixture hangers and stems.
 - c. Switch and receptacle plates which have factory finish other than prime coat or galvanizing.
 - d. Panelboards, except as required or to “touch up” scratches.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the Resident Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected.

3.02 GROUNDING

- A. Install an insulated equipment grounding conductor in all branch circuit and feeder conduits and include the following:
 - 1. Install grounding electrode conductor and connect to reinforcing steel in Ecomister concrete pads
 - 2. Bond together reinforcing steel and metal accessories in Ecomister pads.
 - 3. Provide lightning arrester for system as recommended by Ecomister manufacturer.

3.03 TESTS

- A. The Resident Engineer reserves the right to inspect and test any portion of the equipment, materials, or both during the progress of its erection. The Contractor shall test all wiring and connections for continuity and grounds before connecting any fixtures or equipment.
- B. The Contractor shall test the entire system, as requested, in the presence of the Resident Engineer, when the work is completed to ensure that all portions are free from shorts or grounds. The Contractor shall provide all equipment necessary to conduct these tests.

3.04 CUTTING AND PATCHING

- A. No cutting of finished or structural work may be done without approval of the Resident Engineer. When necessary to have finished material or structural work cut, furnish necessary shop drawings to the Resident Engineer.

3.05 PROTECTION

- A. Protect and cover all equipment during construction and clean and touch up where necessary to remove scars and scratches on all factory-painted equipment. Nameplates bearing descriptive data shall be left clean and unpainted.

3.06 RECORD DRAWINGS

- A. Comply with pertinent provisions of Section 01300.

END OF SECTION

DIVISION 26 ELECTRICAL
SECTION 26 05 33
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes basic electrical material and method requirements for constructing a complete workable electrical system as shown on the Construction Drawings and specified in this Section, including connection to existing overhead services provided by Pacific Gas & Electric.
- B. Related Sections:
 - 1. Section 16050 – Basic Electrical Requirements
 - 2. Section 16910 – Control Panels
- C. Contractor to obtain all permits and pay all fees.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workman who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for performance of the work of this Section.
- B. Preparation, handling, and installation shall be in accordance with the manufacturer’s written instructions and technical data particular to the product specified or approved.
- C. Coordinate and cooperate the installation with other trades.
- D. Work will conform to the National Electrical Contractor’s Association (NECA) Standard of Installation for general installation practice.

1.03 HAZARDOUS CLASSIFICATION – ALL UNDERGROUND CLASS 1, DIVISION 1 HAZARDOUS

- A. All above ground to within 18 inches above ground surface Class 1, Division 2 work in hazardous locations performed in strict accordance with NFPA 70 and NEC for the particular “class” and “division” of hazardous location involved.

PART 2 - PRODUCTS

2.01 LISTINGS

- A. Provide Underwriter's Laboratories (UL) listed and labeled equipment for all items for which UL carries a listing of labeling, unless items are specifically exempted.

2.02 ACCEPTABLE MANUFACTURERS

- A. Furnish all materials shown on the Construction Drawings and described in this Section. Provide specification grade materials, brand new, and bearing the UL label.
- B. Product options and substitutions for specified materials in this Section shall be in accordance with Section 01300.
- C. Acceptable Equipment Manufacturers for
 - 1. Conduit and Conduit Fittings
 - a. AFC Cable Systems, Inc
 - b. Allied Tube & Conduit
 - c. Thomas and Betts
 - d. Carlon
 - e. Appleton
 - f. O.Z. Gedney
 - g. Crouse-Hinds
 - h. Engineering approved equivalent
 - 2. Wire and Cable (600V)
 - a. American Electric Cable Company
 - b. General Wire and Cable Corporation
 - c. Okonite Company
 - d. Rome Cable Corporation
 - e. Southwire

- f. Carol Cable Company
 - g. Royal Electric
 - h. Engineering approved equivalent
3. Solderless Lugs and Grounding Connections
- a. Burndy Engineering Company, Inc.
 - b. O.Z. Gedney Company, Inc.
 - c. Penn Union Electric Corporation
 - d. Thomas and Betts Company, Inc.
 - e. Ilisco
 - f. nVent Erico (CADWELD)
 - g. Engineering approved equivalent
4. Pull Boxes, Gutters, and Special Cabinets
- a. Square D Company
 - b. Hoffman
 - c. Engineering approved equivalent
5. Outlet Boxes
- a. Appleton Electric Company
 - b. Killark Electric Manufacturing Company
 - c. Carlon
 - d. Crouse-Hinds
 - e. Engineering approved equivalent
6. Wiring Devices
- a. Cooper Wiring Devices (A division of Cooper Industries)
 - b. Leviton

- c. Hubbel Incorporated
 - d. Pass and Seymour/Legrand.
 - e. Engineering approved equivalent
7. Conduit Racks, Hangers
- a. Kindorf
 - b. Super Street
 - c. Unistrut
 - d. O.Z. Gedney
 - e. Engineering approved equivalent
8. Fuses
- a. Bussman Manufacturing Company
 - b. Chase-Shawmut Company
9. Transformers
- a. Square D (Sorgel)
 - b. General Electric
 - c. Cutler Hammer
 - d. Engineering approved equivalent
10. Circuit Breakers
- a. Cutler Hammer
 - b. General Electric
 - c. Square D
 - d. Engineering approved equivalent

2.03 CONDUIT

A. General:

1. Each length of conduit shall bear the UL label.
2. Minimum acceptable conduit size is 3/4 inch. Use 1 inch minimum for below grade unless otherwise indicated on the Construction Drawings.

B. Rigid Steel Conduit:

1. Rigid Steel Conduit: Full weight, pipe size, finished inside and out by hot-dipped galvanizing, and made to American National Standards Institute (ANSI) and UL requirements.
2. Couplings: Electroplated, cast, malleable iron.
3. Insulating Bushings: Threaded polypropylene or thermosetting phenolic, rated 150 degrees Centigrade (°C) minimum.
4. Insulated Grounding Bushings: Threaded, cast malleable iron body, with insulated throat and steel “lay-in” ground lug with compression screw.
5. Insulated Metallic Bushings: Threaded, cast, malleable iron body with plastic insulated throat rated 105°C minimum.
6. Running threads are not acceptable.

C. Polyvinyl Chloride (PVC) Conduit:

1. Conduit: UL-listed, Schedule 40 PVC conduit manufactured to National Electrical Manufacturer’s Association (NEMA) TC-2. Other constructions are not acceptable.
2. Fittings: Provide couplings and connectors made by the same manufacturer as the conduit and joined with the recommended cement. Terminate PVC conduits with connectors or end bells.

D. PVC-Coated Rigid Conduit:

1. Conduit: Full weight, pipe size, finished inside and out by hot-dipped galvanizing, having an extruded 40-mil PVC jacket and a red urethane interior coating.
2. Fittings: Provide 40-mil PVC over-lapping pressure-sealing sleeves on couplings and conduit bodies to create tight, pressure-sealed joints. Interior surface shall have a red urethane coating.

- E. Liquid-Tight PVC Flexible Conduit:
 - 1. Conduit: Spiral-wound galvanized steel strip with an extruded PVC jacket; UL-listed Type UA/LA.
 - 2. Fittings: Cast, malleable iron dip or mechanically galvanized finish, with insulated throats.

- F. Wireway System:
 - 1. Provide Joint Industry Conference (JIC) lay-in type wireway, without knockouts, manufactured to UL 870 standards.
 - 2. Use slip-in type connectors that allow lay-in of all conductors.
 - 3. Use fittings and accessories, made by the same wireway manufacturer, that are UL labeled in accordance to UL 870 standards.
 - 4. Wireway Finish: Factory-applied gray epoxy enamel, applied to both inside and outside surfaces, over a corrosion-resistant phosphate primer.

- G. Substitutions:
 - 1. Other wiring systems may be used only as specifically approved by the Resident Engineer in accordance with Section 01630.

2.04 WIRE AND CABLE

- A. General:
 - 1. All wire and cable shall be new and bear the UL label.
 - 2. Use stranded copper wire.
 - 3. Provide 600 volt (V)-rated wire and cable for the secondary power distribution system. Typically, use type THWN/THHN above grade. If any portion of the circuit passes below grade, use type XHHW-2.
 - 4. Minimum Conductor Sizes:
 - a. Power and Lighting Branch Circuits: No. 12 American Wire Gauge (AWG)
 - b. Signal and Control Circuits over 100 V: No. 14 AWG.
 - c. Low Voltage (50V or less): No. 16 or specified cables.

B. Color Coding:

1. Identify conductors as to phase connections by means of color-impregnated insulation or approved color-marking tape as follows:

	120/240	480Y/277
A Phase	Black	Brown
B Phase	Red	Orange
C Phase	Blue	Yellow
Neutral	White	White w/Black Stripe
Ground	Green	Green

2. Motor Power Conductors: Black

3. Field Wiring, Motor Control Conductors:

Start	Blue
Stop	Red
Common	Yellow
Misc. Control	Orange

4. Control Panel Conductors:

Line, load, and control circuits at line voltage	Black
AC control circuit at less than line voltage	Red
DC control circuit	Blue
Interlock control circuits supplied from an external power source	Yellow
AC common	White
DC common	Gray
Ground	Green

5. Wire Delta - Connected Secondary High-Leg: Orange

2.05 INSTRUMENT CABLE

A. General:

1. Provide UL-approved cable for Class 2 or 3 power-limited circuits.
2. Use stranded shielded cable having a drain wire.
3. Rated 600VAC, 90°C dry/75°C wet, single pair/triad instrument cable.
4. Minimum Conductor Sizes: Individual cables shall be No. 16 AWG.
5. All cable shall be new and have the UL label marked on the jacket.

B. Color Coding:

1. Identify conductors regarding polarity connections by color-impregnated insulation or approved color-marking tape positive as white and negative as black.

2.06 WIRING DEVICES

- A. Receptacles: Provide devices designed for extra-hard use in industrial applications and UL-listed specification grade. Use 20 amp (A), 125V-rated devices. Furnish other special receptacles as otherwise noted or detailed on the Construction Drawings.
- B. Switches: Provide devices designed for extra-hard use in industrial applications and UL-listed specification grade. Use 20A, 120-277V-rated devices.
- C. Ground Fault Circuit Interrupters (GFCI): Provide 20A, 120V devices conforming to NEMA 5-20R and UL-listed. Use feed-through type device having 5 mA trip threshold and trip time of 0.025 seconds.
- D. Device Color: Use ivory for normal power; black for normal-power-dedicated circuits; and red for stand-by or emergency power systems.

2.07 DEVICE COVERS

- A. Use galvanized sheet metal or raised covers for plant, process, or unfinished areas. Device plates shall completely cover outlet opening. Sectional device plates are not acceptable.
- B. Provide a laminated plastic engraved label, indicating circuit number, on each device cover. Use white letters on black background for normal power and black letters on red background for stand-by or emergency power systems. Attach plastic label to cover plate using an epoxy adhesive. Dymo labeling will not be acceptable.
- C. Provide die-cast aluminum covers, with spring door and gasket, for outdoor areas.

2.08 BOXES AND FITTINGS

- A. Cast Device Boxes: Provide FS/FD Feraloy with zinc-electroplate finish. Provide Feraloy covers and neoprene gaskets.

2.09 WIRE CONNECTIONS

A. Wire Joints:

1. Join wires in sizes from No. 18 to No. 8 AWG conductor, insulation rated 105°C or less, with electrical spring connectors of three-part construction incorporating a non-restricted, zinc-coated steel spring enclosed in a steel shell having an outer jacket of vinyl plastic with a flexible insulating skirt. Self-stripping pigtail and top connectors are not acceptable.
2. Join wire sizes No. 6 and larger with solid copper split-bolt connectors torqued to the proper value and taped, or with properly insulated copper compression connectors installed according to the manufacturer's instructions.
3. Wire Connections Made on Platforms, Conveyor Systems, and Other Vibrations Equipment: Nylon, self-insulated crimp on wire joints; T&B Series RC & RP.
4. Motor Leads: Join wires using 3M-series 5300 pigtail or in-line splicing kit.
5. Conductors Subject to Moisture: Use 3M Scotchcast-series 82-BFI splicing kit for power and series; 72-N splicing kit for signal or control conductors.

- B. Splicing and Insulating Tape (600V and below): For general-purpose electrical tape, use black 7-millimeter vinyl tape, ultraviolet-proof and suitable for temperatures from minus 18°C to 105°C.

C. Labeling Wires:

1. Branch Circuits: All wires in main J-boxes shall have circuit number tags. Use self-adhesive white tapes with black numbers.
2. Control Conductors: White PVC-shrink sleeve marker with printed (black) wire number (e.g., M560-10).

2.10 MOTOR CONTROLLERS

A. Starters:

1. Magnetic Starters: Furnish full-voltage individual starter as shown on the Contract Drawings. Use minimum NEMA Size 1 unless otherwise shown. Overload relays shall be solid state. Use Class 10 overloads for submersible pump applications or as recommended by the pump manufacturer. Provide a NEMA 4 enclosure as specified on the Construction Drawings.

2.11 ELECTRICAL SUPPORTING DEVICES

- A. Concrete and Masonry Fasteners:
 1. Concrete: Hilti HSL expansion anchors for 1/2 inch and larger bolts; Hilti sleeve anchor for 3/8 inch and smaller bolts.
 2. Masonry Block: Hilti sleeve anchors.
- B. Conduit Straps: Hot-dip galvanized, cast, malleable iron, one-hold-type strap with cast clamp-backs and spacers as required.
- C. Construction Channel: 1-1/2 inch by 1-1/2 inch 12-gauge hot-dipped galvanized or “Galv-Krom” finished steel channel with 17/32-inch-diameter bolt holes, 1-1/2 inch on center.
- D. Hanger Rods: Threaded hot-rolled steel; electroplated or cadmium plated; 3/8 inch minimum diameter; 1/2 inch diameter, conduit sizes 2-1/2 to 3-1/2 inches; 5/8 inch diameter, larger conduits.
- E. Fasteners: Wood screws for fastening to wood; machine screws for fastening to steel; toggle bolts or “molly” bolts for fastening to hollow concrete block (1/4 inch or smaller), gypsum board, or plaster walls; expansion anchors for attachments to cast-in-place or precast concrete.

2.12 IDENTIFYING DEVICES

- A. Nameplates: Provide engraved laminated nameplates, 1-inch by 3-1/2-inch minimum, machine screw retained, for permanent identification of all panelboards, motor starters, and cabinet-enclosed apparatus. Color shall be white with black letters. Panelboard numbers shall be inside the panel door. Refer to Section 16050 for nameplate construction and letter sizes.
- B. Wire and Terminal Markers: Provide self-adhering, preprinted cloth or vinyl wire markers for general branch circuit systems. Use shrink-sleeve markers for control and instrument systems.

2.13 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Provide precast boxes with pulling inserts, counting channels, knockouts and extensions as shown on the drawings.
- B. Utility power and telephone company pull and splice boxes: Comply to utility company precast box size and construction standards; provide their specified box accessories and grounding devices or products.
- C. Provide spring-assisted (to open) galvanized steel diamond plate covers that identify box service; (e.g., ELECTRIC POWER, LIGHTING, TELEPHONE), or as otherwise noted on the drawings. Furnish covers and locking latch designed for their location loading requirements: (e.g., full traffic, light vehicular traffic, or pedestrian traffic).
- D. Furnish 6-inch-diameter (minimum) sump for boxes having a concrete base (or floor).
- E. Provide a minimum 10-foot slack of all conductors on a neat loop in pull boxes designated for future use.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the Resident Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected.

3.02 CONDUIT INSTALLATION

- A. Applications:
 - 1. Rigid Steel Conduit: Exterior above grade power and lighting branch circuits; interior power and lighting branch circuit in machine or process operations areas; below grade (must be taped or protected against corrosion) elbows and vertical risers to above-grade.
 - 2. Liquid-Tight Flexible Metallic Conduit: In damp and wet locations, in other locations for connections to all pump motors, solenoid valves, transformers, vibrating equipment, and similar devices.

3. PVC Conduits: Schedule 40 PVC may be used underground if encased in concrete. Minimum earthfill cover shall be 24 inches. Multiple PVC conduits will be installed using approved spacers at intervals not exceeding five (5) feet.
4. PVC-Coated Rigid Steel Conduit: Exterior power and lighting branch circuits in direct contact with earth, concrete, constant moisture or subject to damage from corrosives (Schedule 40 PVC preferred for underground and in-slab wiring); below grade elbows and vertical risers to above-grade

B. General:

1. Route concealed conduits as directly as possible and provide large radii bends. Rigidly secure conduit in position by means of approved clamps.
2. Plan conduit routing before installation and coordinate with other construction. Install conduits so they do not prevent removal, nor block access to mechanical or electrical equipment.
3. Install exposed conduits straight and true with reference to the adjacent work.
4. Support vertical conduit runs.
5. Running threads and threadless couplings are not acceptable for rigid steel conduit. Where necessary for connecting rigid conduit, use UL-listed couplings or unions.
6. Long Runs of Conduit: Provide pull boxes every 200 feet minimum.
7. Provide a 100-pound tensile strength polyethylene pulling rope in empty conduits.
8. Install an insulated copper green grounding conductor in all control, branch circuit and feeder raceways.
9. Seal all conduits during construction with conduit plugs or “pennies” set under bushings.
10. Install seal-off fitting on all raceways that enter an enclosure from a below-grade location.
11. PVC Schedule 40 Slab Penetrations: Use PVC-coated rigid steel conduit or rigid steel conduit wrapped with rugged pressure-sensitive 20-mil PVC tape (Scotchwrap 51) for all slab penetrations or below-above grade transitions. Apply one coat of Scotchwrap pipe primer before taping the pipe.

12. Conduit joints shall be painted with Crouse-Hinds STL thread lubricant.
13. Conduit Installation for Machine or Process Operations Areas. Use FORM 7 conduits or FS/FD boxes, with cover and gasket, for all conductor pull outlets.
14. Install expansion couplings where any conduit crosses a separation or expansion joint.
15. Rigid Conduit Terminations: Use conduit hubs for outdoor locations.
16. Bond all metal conduits at free-standing enclosures to the ground bus using grounding bushings.

C. Underground Raceways:

1. Provide a minimum raceway slope of 3 inches, each 100 feet away from outdoor switchgear, and toward handholes or other electrical drainage points.
2. Stagger conduit joints by rows and layers to provide maximum raceway bank strength. Identify conduits, using their assigned conduit numbers or circuit designation, at handholes or other termination points.
3. During construction, protect partially completed conduits from mud, sand, dirt, or other debris by using plugs.
4. After an underground raceway bank is completed, pull a testing mandrel, not less than 12 inches long and having a diameter of ¼ inch less than conduit diameter, through each conduit. Install a 150-pound pull rope in each conduit and leave at least 3 feet of slack at each end.
5. Provide no less than a 6-inch clearance from a conduit or raceway bank to each side, and 3-inch clearance to the trench bottom. Clean debris or loose dirt from trench bottom and provide a 3-inch sand base.
6. Provide a 4 mil thick, 3-inch wide red polyethylene marking tape with foil laminate installed 12 inches above top of all raceways or conduits in all underground installations. Tape to have “CAUTION – ELECTRIC LINE BURIED BELOW” printed continuously. Panduit, Motivator, 3M or equivalent.

3.03 WIRING AND CABLE INSTALLATION

A. General:

1. Install conductors after conduit system is completed. Care will be taken in pulling conductors such that insulation is not damaged. Use UL-approved wire pulling lubricants as needed.
2. Install and test all cables in accordance with the manufacturer's requirements and warranty.
3. Before pulling conductors or cables, the Contractor shall swab out below-grade raceways.
4. Use 10 AWG, minimum conductor size, for branch circuit homeruns greater than 100 feet.

B. Splicing and Terminating:

1. All aspects of splicing and terminating will be in accordance with the manufacturer's published procedures.
2. All splices in outlet boxes with connectors, as specified herein, will be made with separate tails of correct color. Provide at least 6 inches of tails packed in box after splice is made.
3. Neatly bundle and clamp all wire and cable in panels, control centers, and equipment enclosures.

C. Identification:

1. Identify branch circuit conductors with vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each circuit with the corresponding circuit number at the panelboard.
2. Identify size No. 6 and larger using phase color markers and identification tags.
3. Provide vinyl marker tape for all terminal strips.

D. Connections to Circuit Breakers, Switches, and Terminal Strips, Stranded Copper Conductors:

1. No. 12 through 8 AWG: Terminate using locking-tongue style, compression-type lugs, or by connectors supplied by the manufacturer.

- E. Joints in Wires in Dry Locations, Copper Conductors:
 - 1. No. 8 AWG and Smaller: Use cap or twist-on, spring-type solderless connectors. Self-stripping tap connectors shall not be acceptable.
 - 2. No. 6 AWG and Larger: Use split-bolt connectors or compression sleeves. Insulate joints with rubber tape and protected with half-lapped layers of vinyl-plastic electrical tape. Insulation may also be provided by UL-listed pre-manufactured components such as heat-shrink or cold-shrink devices.
- F. Joints in Wires in Moist Locations, Copper Conductors: Secure as specified above, then encapsulated in epoxy (Scotchcast or approved equal).
- G. Grounding:
 - 1. Permanent Ground Enclosures of Equipment, Raceways, and Fixtures: Install a copper-insulated green equipment grounding conductor in all branch circuit and feeder raceways. Equipment ground shall originate at panelboard ground bus and be bonded to all outlet boxes and electrical equipment enclosures. Connect receptacle ground terminals to the equipment grounding conductor by an insulated copper conductor.
 - 2. Panelboards Having Multiple-Ground Buses: Buses are to be bonded together by using 6 AWG (minimum) conductor; using panelboard interior support structure as a bonding medium is not acceptable.
- H. Signal Wiring:
 - 1. Identify wire used for alarm and control signal applications at both ends and referenced to appropriate Record Drawings. Refer to Section 01720 for additional information.
 - 2. Identify control wiring in accordance with record control diagrams.

3.04 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Do not locate boxes in roadways unless specifically approved by the Resident Engineer.
- B. Make all precast joints walls, risers, and conduit entrances watertight using cement grout or sealant. Use cement grout consisting of two parts sand and one part cement and sufficient water to form a plastic slurry. Apply in a manner to insure filling of all joint voids and conduit entrances.
- C. Excavation and bedding: Excavation must allow for overall assembled height of boxes plus added height of risers and bedding material consisting of 6-inch

compacted sand or gravel. Provide a minimum 4-inch clearance around the box exterior walls.

- D. Setting: Assemble boxes by lowering each section into the excavation. Lower, set and level base sections in place. The seal surfaces between sections must be cleaned and have gaskets in place before placing next section. Excavation hole must not contain water when setting the box.
- E. Backfilling: Provide compactable material such as pea gravel or sand. Not acceptable to use material such as saturated soil or material containing large rocks or chunks. Backfill after box completely installed and compact progressively from the bottom to the top surface.

3.05 ELECTRICAL TESTING

A. General:

1. Provide all materials, supplies, tools, equipment, labor, and services required to perform all tests as specified in this Section.
2. Submit test reports for approval by the Resident Engineer.
3. Correct all deficiencies revealed by tests. Replace at Contractor's cost, all materials and equipment found faulty.
4. Contractor shall furnish the services of an independent electrical testing firm acceptable to the Resident Engineer to conduct all testing. Contractor may perform low-voltage wire and cable meggering.
5. Maintain a written record of all tests showing date, personnel making test, equipment or material tested, tests performed, manufacturer and serial number of testing equipment and results.
6. Contractor shall be responsible for any damage to equipment or material due to improper test procedures or test apparatus handling, and shall replace, at his cost, or restore to original condition any damaged equipment or material.
7. It is the intent of these tests to assure that all electrical equipment is operational within industry and manufacturer's tolerances and is installed in accordance with design specifications.
8. The tests and inspections will determine the suitability for energization.
9. The InterNational Electrical Testing Association (NETA) guidelines are to be used for the testing procedures and acceptance tests values of results.

B. Work Included:

1. Test all wire, cable, equipment, and systems installed or connected under electrical contract to assure proper installation, setting, connection, and functioning in accordance with the Construction Drawings, Specifications, and the manufacturer's recommendations. The intent is that field testing be extensive and complete as specified, to provide assurance of correct installation and operation of equipment.
2. Perform all tests and inspections recommended by the equipment manufacturer, whether required by these Specifications or not, unless specifically waived by the Resident Engineer.
3. Tests shall include, but are not limited to, the following:
 - a. All Wiring: Free of shorts, unintentional, and grounds.
 - b. Molded Case Breakers, 150A and Larger: Time and instantaneous tripping, physical condition, contact resistance, insulation resistance.
 - c. Power Circuit Breakers: Calibration to time/current curves, physical condition, contact resistance, insulation resistance.
 - d. Grounding System: Ground resistance (impedance), ground integrity.
 - e. High voltage cable.
 - f. Motor Controls: Proper overload sensing, insulation resistance.
 - g. Ground Fault System: Neutral free of improper grounds, pick-up, coordination, zone interlocking. Submit certified test report to the Resident Engineer.
 - h. Protective Relays: Pick-up, timing, insulation resistance, physical condition.
 - i. Switchboards, Panelboards, Bus Ducts, etc.: Insulation resistance, physical condition, proper torque on connections.
 - j. Feeder Cables and Motor-Branch Power Conductors: Insulation resistance.
 - k. Motors: Proper rotation, insulation resistance.

C. Minimum Acceptable Test Results:

1. Ground System: The main ground electrode system resistance to ground no greater than 5 ohms.
2. Electrical Apparatus and Systems Insulation Resistance:

Maximum Voltage Rating of Equipment	Minimum Test Voltage D.C.	Minimum Insulation Resistance in Megohms
250	500	25
600	1,000	100
5,000	2,500	1,000
8,000	2,500	2,000
15,000	2,500	5,000
25,000	5,000	20,000

3. Low Voltage Cables (600V maximum):

Maximum Voltage Rating of Equipment	Minimum Test Voltage D.C.	Minimum Insulation Resistance in Megohms
300	500	2
600	1,000	2

3.06 PROTECTION

- A. General: Conduits, junction boxes, outlet boxes, and other openings shall be kept closed to prevent entry of foreign matter. Cover fixtures, equipment, and apparatus for protection against dirt, paint, water, chemical or mechanical damage, before and during the construction period. Restore damaged fixtures, apparatus, or equipment to original condition prior to final acceptance, including restoration of damaged shop coats of paint at no additional cost to the County. Protect brightly finished surfaces and similar items during construction. No rust or damage will be permitted.

3.07 WORKMANSHIP

A. General:

1. Preparation, handling, and installation shall be in accordance with the manufacturer's written instructions and technical data particular to the product specified or approved.
2. Coordinate and cooperate the installation with other trades.
3. Work will conform to the National Electrical Contractor's Association Standard of Installation for general installation practice.

END OF SECTION

DIVISION 26 ELECTRICAL
SECTION 26 09 00
CONTROL PANELS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes supplying and installing the electrical controls and wiring required for control panel fabrication and installation including supports and concrete fittings, as shown on the Construction Drawings, or specified herein, and as needed for a complete and operational system.

1.02 RELATED SECTIONS:

- A Section 03 30 53 – Cast-in-Place Concrete
- B. Section 26 05 00 - Basic Electrical Requirements
- C. Section 26 05 33 - Basic Electrical Materials and Methods

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workman who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for performance of the work of this Section.

PART 2 - PRODUCTS

2.01 DELIVERY, STORAGE AND HANDLING

- A. Comply with the pertinent provisions of Section 01600.

2.02 ACCEPTABLE MANUFACTURERS

- A. Furnish all materials indicated on the Construction Drawings and in this Section. Provide industrial grade materials that are brand new and bear the UL label.
- B. Product options and substitutions for specified materials in this Section shall be in accordance with Section 01630.
- C. Acceptable Equipment Manufacturers for:

1. Enclosures
 - a. Hoffman
 - b. Weigman
 - c. Hammond
 - d. Engineering approved equivalent

2. Motor Control
 - a. Square D
 - b. Furnas
 - c. Allen-Bradley
 - d. Cutler-Hammer
 - e. General Electric
 - f. Engineering approved equivalent

3. Control Devices
 - a. Square D
 - b. Furnas
 - c. Allen-Bradley
 - d. Cutler-Hammer
 - e. General Electric
 - f. Engineering approved equivalent

4. Terminal Blocks
 - a. Phoenix
 - b. Weidmuller
 - c. Engineering approved equivalent

2.02 ENCLOSURES

- A. General: Enclosures shall be designed to house electrical and electronic controls, instruments, and components, and shall provide protection from dust, dirt, oil, and water.
- B. Enclosures in wet or damp areas shall be NEMA 4 or Hoffman Bulletin A-4.
- C. Enclosures in corrosive areas shall be NEMA 4 Fiberglass.

2.03 NAMEPLATES

- A. Nameplates will be laminated plastic; identify the control panel, control device, or instrument designation; and use 1/4-inch-high, black letters on white background, unless otherwise specified or detailed.

- B. Provide control or instrument switches with an escutcheon plate that clearly identifies each operation position.

2.04 CONTROL DEVICES

- A. General: NEMA 4 panel-mounted control devices shall be used in outdoor or other wet areas.
- B. Control relays shall be heavy duty, machine tool, industrial-type relays, with 10A-rated contacts and at least one normally open/normally closed (NO/NC) convertible spare contact.
- C. Indicating lights shall be transformer type or LED, heavy-duty oil-tight units rated at 120V.
- D. Selector switches and pushbuttons shall be heavy-duty oil-tight units and shall have the specified momentary or maintained 10A, 120V contacts.
- E. Control switches will be UL-listed and HP-rated cam-actuated selector switches with a 20A, 600V continuous current rating, Electros witch Series PR20 or equivalent.
- F. Time totalizers will be synchronous motor-driven, non-reset, six-digit-wheels, including a 1/10 digit on hours and minutes, rated NEMA 4 for damp or wet areas.

2.05 TERMINAL BLOCKS

- A. General: Terminal blocks shall be NEMA rated, DIN-Rail type, molded out of polyamide or melamine plastic; metal parts will be stainless steel, cadmium, or zinc plated to inhibit corrosion; temperature service range shall be minus 40°C to 75°C. Provide screw-clamp terminals.
- B. Terminals for 120V or less circuit shall be 30A (minimum), 600V rated terminals.
- C. Terminals for 208V to 480V circuits shall be 55A (minimum), 600V rated terminals.

2.06 WIRE MARKING

- A. General: White heat-shrink wire marker sleeves with black printed wire identification numbers shall be provided.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the County and the Resident Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected.

3.02 CONTROL PANEL INSTALLATION

A. General

1. Two coats of rust-inhibiting, light gray epoxy enamel paint shall be applied to control panel enclosures, excluding NEMA 4X. Paint shall be applied after device holes have been punched or cut out.
2. Wire groups shall be bundled using wire PAN-TYs or spiral wraps. Wire bundles shall be secured to the panel using machine screws. Provide plastic wiring duct for back panel wire bundles.
3. A barrier shall be provided to separate line voltage from low (24V or less) voltage systems. Isolate 480V terminals from control terminals.
4. Relay and other components shall be secured to the panel using machine screws. Self-tapping screws will not be acceptable.
5. Laminated plastic nameplates identifying control devices or components inside the enclosure shall be attached to the back panel using machine screws.
6. The panel fabricator shall operationally check the control panels, including the programmable control system, before shipment to the Site or installation as part of the packaged equipment.
7. Control wire sizes, types, and color coding shall be installed in accordance to Section 16100.

B. Record Documents:

1. Comply with the pertinent provisions of Section 01720.
2. Control panel shall be equipped with final record schematic and wiring diagrams or programmable controller program printout, ladder diagram type.

3. Record documents shall be stored in a heavy-duty clear plastic envelope and secured to the interior back panel or door of the control panel.

END OF SECTION

DIVISION 26 ELECTRICAL
SECTION 26 05 33
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes basic electrical material and method requirements for constructing a complete workable electrical system as shown on the Construction Drawings and specified in this Section, including connection to existing overhead services provided by Pacific Gas & Electric.
- B. Related Sections:
 - 1. Section 16050 – Basic Electrical Requirements
 - 2. Section 16910 – Control Panels
- C. Contractor to obtain all permits and pay all fees.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workman who are trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for performance of the work of this Section.
- B. Preparation, handling, and installation shall be in accordance with the manufacturer's written instructions and technical data particular to the product specified or approved.
- C. Coordinate and cooperate the installation with other trades.
- D. Work will conform to the National Electrical Contractor's Association (NECA) Standard of Installation for general installation practice.

1.03 HAZARDOUS CLASSIFICATION – ALL UNDERGROUND CLASS 1, DIVISION 1 HAZARDOUS

- A. All above ground to within 18 inches above ground surface Class 1, Division 2 work in hazardous locations performed in strict accordance with NFPA 70 and NEC for the particular “class” and “division” of hazardous location involved.

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PART 2 - PRODUCTS

2.01 LISTINGS

- A. Provide Underwriter's Laboratories (UL) listed and labeled equipment for all items for which UL carries a listing of labeling, unless items are specifically exempted.

2.02 ACCEPTABLE MANUFACTURERS

- A. Furnish all materials shown on the Construction Drawings and described in this Section. Provide specification grade materials, brand new, and bearing the UL label.
- B. Product options and substitutions for specified materials in this Section shall be in accordance with Section 01300.
- C. Acceptable Equipment Manufacturers for
 - 1. Conduit and Conduit Fittings
 - a. AFC Cable Systems, Inc
 - b. Allied Tube & Conduit
 - c. Thomas and Betts
 - d. Carlon
 - e. Appleton
 - f. O.Z. Gedney
 - g. Crouse-Hinds
 - h. Engineering approved equivalent
 - 2. Wire and Cable (600V)
 - a. American Electric Cable Company
 - b. General Wire and Cable Corporation
 - c. Okonite Company
 - d. Rome Cable Corporation
 - e. Southwire

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- f. Carol Cable Company
 - g. Royal Electric
 - h. Engineering approved equivalent
3. Solderless Lugs and Grounding Connections
- a. Burndy Engineering Company, Inc.
 - b. O.Z. Gedney Company, Inc.
 - c. Penn Union Electric Corporation
 - d. Thomas and Betts Company, Inc.
 - e. Ilisco
 - f. nVent Erico (CADWELD)
 - g. Engineering approved equivalent
4. Pull Boxes, Gutters, and Special Cabinets
- a. Square D Company
 - b. Hoffman
 - c. Engineering approved equivalent
5. Outlet Boxes
- a. Appleton Electric Company
 - b. Killark Electric Manufacturing Company
 - c. Carlon
 - d. Crouse-Hinds
 - e. Engineering approved equivalent
6. Wiring Devices
- a. Cooper Wiring Devices (A division of Cooper Industries)
 - b. Leviton

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- c. Hubbel Incorporated
 - d. Pass and Seymour/Legrand.
 - e. Engineering approved equivalent
7. Conduit Racks, Hangers
- a. Kindorf
 - b. Super Street
 - c. Unistrut
 - d. O.Z. Gedney
 - e. Engineering approved equivalent
8. Fuses
- a. Bussman Manufacturing Company
 - b. Chase-Shawmut Company
9. Transformers
- a. Square D (Sorgel)
 - b. General Electric
 - c. Cutler Hammer
 - d. Engineering approved equivalent
10. Circuit Breakers
- a. Cutler Hammer
 - b. General Electric
 - c. Square D
 - d. Engineering approved equivalent

2.03 CONDUIT

A. General:

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1. Each length of conduit shall bear the UL label.
2. Minimum acceptable conduit size is 3/4 inch. Use 1 inch minimum for below grade unless otherwise indicated on the Construction Drawings.

B. Rigid Steel Conduit:

1. Rigid Steel Conduit: Full weight, pipe size, finished inside and out by hot-dipped galvanizing, and made to American National Standards Institute (ANSI) and UL requirements.
2. Couplings: Electroplated, cast, malleable iron.
3. Insulating Bushings: Threaded polypropylene or thermosetting phenolic, rated 150 degrees Centigrade (°C) minimum.
4. Insulated Grounding Bushings: Threaded, cast malleable iron body, with insulated throat and steel “lay-in” ground lug with compression screw.
5. Insulated Metallic Bushings: Threaded, cast, malleable iron body with plastic insulated throat rated 105°C minimum.
6. Running threads are not acceptable.

C. Polyvinyl Chloride (PVC) Conduit:

1. Conduit: UL-listed, Schedule 40 PVC conduit manufactured to National Electrical Manufacturer’s Association (NEMA) TC-2. Other constructions are not acceptable.
2. Fittings: Provide couplings and connectors made by the same manufacturer as the conduit and joined with the recommended cement. Terminate PVC conduits with connectors or end bells.

D. PVC-Coated Rigid Conduit:

1. Conduit: Full weight, pipe size, finished inside and out by hot-dipped galvanizing, having an extruded 40-mil PVC jacket and a red urethane interior coating.
2. Fittings: Provide 40-mil PVC over-lapping pressure-sealing sleeves on couplings and conduit bodies to create tight, pressure-sealed joints. Interior surface shall have a red urethane coating.

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- E. Liquid-Tight PVC Flexible Conduit:
 - 1. Conduit: Spiral-wound galvanized steel strip with an extruded PVC jacket; UL-listed Type UA/LA.
 - 2. Fittings: Cast, malleable iron dip or mechanically galvanized finish, with insulated throats.

- F. Wireway System:
 - 1. Provide Joint Industry Conference (JIC) lay-in type wireway, without knockouts, manufactured to UL 870 standards.
 - 2. Use slip-in type connectors that allow lay-in of all conductors.
 - 3. Use fittings and accessories, made by the same wireway manufacturer, that are UL labeled in accordance to UL 870 standards.
 - 4. Wireway Finish: Factory-applied gray epoxy enamel, applied to both inside and outside surfaces, over a corrosion-resistant phosphate primer.

- G. Substitutions:
 - 1. Other wiring systems may be used only as specifically approved by the Resident Engineer in accordance with Section 01630.

2.04 WIRE AND CABLE

- A. General:
 - 1. All wire and cable shall be new and bear the UL label.
 - 2. Use stranded copper wire.
 - 3. Provide 600 volt (V)-rated wire and cable for the secondary power distribution system. Typically, use type THWN/THHN above grade. If any portion of the circuit passes below grade, use type XHHW-2.
 - 4. Minimum Conductor Sizes:
 - a. Power and Lighting Branch Circuits: No. 12 American Wire Gauge (AWG)
 - b. Signal and Control Circuits over 100 V: No. 14 AWG.
 - c. Low Voltage (50V or less): No. 16 or specified cables.

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B. Color Coding:

1. Identify conductors as to phase connections by means of color-impregnated insulation or approved color-marking tape as follows:

	120/240	480Y/277
A Phase	Black	Brown
B Phase	Red	Orange
C Phase	Blue	Yellow
Neutral	White	White w/Black Stripe
Ground	Green	Green

2. Motor Power Conductors: Black
3. Field Wiring, Motor Control Conductors:

Start	Blue
Stop	Red
Common	Yellow
Misc. Control	Orange

4. Control Panel Conductors:

Line, load, and control circuits at line voltage	Black
AC control circuit at less than line voltage	Red
DC control circuit	Blue
Interlock control circuits supplied from an external power source	Yellow
AC common	White
DC common	Gray
Ground	Green

5. Wire Delta - Connected Secondary High-Leg: Orange

2.05 INSTRUMENT CABLE

A. General:

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1. Provide UL-approved cable for Class 2 or 3 power-limited circuits.
 2. Use stranded shielded cable having a drain wire.
 3. Rated 600VAC, 90°C dry/75°C wet, single pair/triad instrument cable.
 4. Minimum Conductor Sizes: Individual cables shall be No. 16 AWG.
 5. All cable shall be new and have the UL label marked on the jacket.
- B. Color Coding:
1. Identify conductors regarding polarity connections by color-impregnated insulation or approved color-marking tape positive as white and negative as black.

2.06 WIRING DEVICES

- A. Receptacles: Provide devices designed for extra-hard use in industrial applications and UL-listed specification grade. Use 20 amp (A), 125V-rated devices. Furnish other special receptacles as otherwise noted or detailed on the Construction Drawings.
- B. Switches: Provide devices designed for extra-hard use in industrial applications and UL-listed specification grade. Use 20A, 120-277V-rated devices.
- C. Ground Fault Circuit Interrupters (GFCI): Provide 20A, 120V devices conforming to NEMA 5-20R and UL-listed. Use feed-through type device having 5 mA trip threshold and trip time of 0.025 seconds.
- D. Device Color: Use ivory for normal power; black for normal-power-dedicated circuits; and red for stand-by or emergency power systems.

2.07 DEVICE COVERS

- A. Use galvanized sheet metal or raised covers for plant, process, or unfinished areas. Device plates shall completely cover outlet opening. Sectional device plates are not acceptable.
- B. Provide a laminated plastic engraved label, indicating circuit number, on each device cover. Use white letters on black background for normal power and black letters on red background for stand-by or emergency power systems. Attach plastic label to cover plate using an epoxy adhesive. Dymo labeling will not be acceptable.
- C. Provide die-cast aluminum covers, with spring door and gasket, for outdoor areas.

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2.08 BOXES AND FITTINGS

- A. Cast Device Boxes: Provide FS/FD Feraloy with zinc-electroplate finish. Provide Feraloy covers and neoprene gaskets.

2.09 WIRE CONNECTIONS

A. Wire Joints:

1. Join wires in sizes from No. 18 to No. 8 AWG conductor, insulation rated 105°C or less, with electrical spring connectors of three-part construction incorporating a non-restricted, zinc-coated steel spring enclosed in a steel shell having an outer jacket of vinyl plastic with a flexible insulating skirt. Self-stripping pigtail and top connectors are not acceptable.
2. Join wire sizes No. 6 and larger with solid copper split-bolt connectors torqued to the proper value and taped, or with properly insulated copper compression connectors installed according to the manufacturer's instructions.
3. Wire Connections Made on Platforms, Conveyor Systems, and Other Vibrations Equipment: Nylon, self-insulated crimp on wire joints; T&B Series RC & RP.
4. Motor Leads: Join wires using 3M-series 5300 pigtail or in-line splicing kit.
5. Conductors Subject to Moisture: Use 3M Scotchcast-series 82-BFI splicing kit for power and series; 72-N splicing kit for signal or control conductors.

- B. Splicing and Insulating Tape (600V and below): For general-purpose electrical tape, use black 7-millimeter vinyl tape, ultraviolet-proof and suitable for temperatures from minus 18°C to 105°C.

C. Labeling Wires:

1. Branch Circuits: All wires in main J-boxes shall have circuit number tags. Use self-adhesive white tapes with black numbers.
2. Control Conductors: White PVC-shrink sleeve marker with printed (black) wire number (e.g., M560-10).

2.10 MOTOR CONTROLLERS

A. Starters:

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1. Magnetic Starters: Furnish full-voltage individual starter as shown on the Contract Drawings. Use minimum NEMA Size 1 unless otherwise shown. Overload relays shall be solid state. Use Class 10 overloads for submersible pump applications or as recommended by the pump manufacturer. Provide a NEMA 4 enclosure as specified on the Construction Drawings.

2.11 ELECTRICAL SUPPORTING DEVICES

- A. Concrete and Masonry Fasteners:
 1. Concrete: Hilti HSL expansion anchors for 1/2 inch and larger bolts; Hilti sleeve anchor for 3/8 inch and smaller bolts.
 2. Masonry Block: Hilti sleeve anchors.
- B. Conduit Straps: Hot-dip galvanized, cast, malleable iron, one-hold-type strap with cast clamp-backs and spacers as required.
- C. Construction Channel: 1-1/2 inch by 1-1/2 inch 12-gauge hot-dipped galvanized or "Galv-Krom" finished steel channel with 17/32-inch-diameter bolt holes, 1-1/2 inch on center.
- D. Hanger Rods: Threaded hot-rolled steel; electroplated or cadmium plated; 3/8 inch minimum diameter; 1/2 inch diameter, conduit sizes 2-1/2 to 3-1/2 inches; 5/8 inch diameter, larger conduits.
- E. Fasteners: Wood screws for fastening to wood; machine screws for fastening to steel; toggle bolts or "molly" bolts for fastening to hollow concrete block (1/4 inch or smaller), gypsum board, or plaster walls; expansion anchors for attachments to cast-in-place or precast concrete.

2.12 IDENTIFYING DEVICES

- A. Nameplates: Provide engraved laminated nameplates, 1-inch by 3-1/2-inch minimum, machine screw retained, for permanent identification of all panelboards, motor starters, and cabinet-enclosed apparatus. Color shall be white with black letters. Panelboard numbers shall be inside the panel door. Refer to Section 16050 for nameplate construction and letter sizes.
- B. Wire and Terminal Markers: Provide self-adhering, preprinted cloth or vinyl wire markers for general branch circuit systems. Use shrink-sleeve markers for control and instrument systems.

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2.13 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Provide precast boxes with pulling inserts, counting channels, knockouts and extensions as shown on the drawings.
- B. Utility power and telephone company pull and splice boxes: Comply to utility company precast box size and construction standards; provide their specified box accessories and grounding devices or products.
- C. Provide spring-assisted (to open) galvanized steel diamond plate covers that identify box service; (e.g., ELECTRIC POWER, LIGHTING, TELEPHONE), or as otherwise noted on the drawings. Furnish covers and locking latch designed for their location loading requirements: (e.g., full traffic, light vehicular traffic, or pedestrian traffic).
- D. Furnish 6-inch-diameter (minimum) sump for boxes having a concrete base (or floor).
- E. Provide a minimum 10-foot slack of all conductors on a neat loop in pull boxes designated for future use.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Notify the Resident Engineer of such conditions and proposed corrective actions before correcting unsatisfactory conditions. Do not proceed until unsatisfactory conditions are corrected.

3.02 CONDUIT INSTALLATION

- A. Applications:
 - 1. Rigid Steel Conduit: Exterior above grade power and lighting branch circuits; interior power and lighting branch circuit in machine or process operations areas; below grade (must be taped or protected against corrosion) elbows and vertical risers to above-grade.
 - 2. Liquid-Tight Flexible Metallic Conduit: In damp and wet locations, in other locations for connections to all pump motors, solenoid valves, transformers, vibrating equipment, and similar devices.
 - 3. PVC Conduits: Schedule 40 PVC may be used underground if encased in concrete. Minimum earthfill cover shall be 24 inches. Multiple PVC

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conduits will be installed using approved spacers at intervals not exceeding five (5) feet.

4. PVC-Coated Rigid Steel Conduit: Exterior power and lighting branch circuits in direct contact with earth, concrete, constant moisture or subject to damage from corrosives (Schedule 40 PVC preferred for underground and in-slab wiring); below grade elbows and vertical risers to above-grade

B. General:

1. Route concealed conduits as directly as possible and provide large radii bends. Rigidly secure conduit in position by means of approved clamps.
2. Plan conduit routing before installation and coordinate with other construction. Install conduits so they do not prevent removal, nor block access to mechanical or electrical equipment.
3. Install exposed conduits straight and true with reference to the adjacent work.
4. Support vertical conduit runs.
5. Running threads and threadless couplings are not acceptable for rigid steel conduit. Where necessary for connecting rigid conduit, use UL-listed couplings or unions.
6. Long Runs of Conduit: Provide pull boxes every 200 feet minimum.
7. Provide a 100-pound tensile strength polyethylene pulling rope in empty conduits.
8. Install an insulated copper green grounding conductor in all control, branch circuit and feeder raceways.
9. Seal all conduits during construction with conduit plugs or “pennies” set under bushings.
10. Install seal-off fitting on all raceways that enter an enclosure from a below-grade location.
11. PVC Schedule 40 Slab Penetrations: Use PVC-coated rigid steel conduit or rigid steel conduit wrapped with rugged pressure-sensitive 20-mil PVC tape (Scotchwrap 51) for all slab penetrations or below-above grade transitions. Apply one coat of Scotchwrap pipe primer before taping the pipe.
12. Conduit joints shall be painted with Crouse-Hinds STL thread lubricant.

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13. Conduit Installation for Machine or Process Operations Areas. Use FORM 7 conduits or FS/FD boxes, with cover and gasket, for all conductor pull outlets.
 14. Install expansion couplings where any conduit crosses a separation or expansion joint.
 15. Rigid Conduit Terminations: Use conduit hubs for outdoor locations.
 16. Bond all metal conduits at free-standing enclosures to the ground bus using grounding bushings.
- C. Underground Raceways:
1. Provide a minimum raceway slope of 3 inches, each 100 feet away from outdoor switchgear, and toward handholes or other electrical drainage points.
 2. Stagger conduit joints by rows and layers to provide maximum raceway bank strength. Identify conduits, using their assigned conduit numbers or circuit designation, at handholes or other termination points.
 3. During construction, protect partially completed conduits from mud, sand, dirt, or other debris by using plugs.
 4. After an underground raceway bank is completed, pull a testing mandrel, not less than 12 inches long and having a diameter of $\frac{1}{4}$ inch less than conduit diameter, through each conduit. Install a 150-pound pull rope in each conduit and leave at least 3 feet of slack at each end.
 5. Provide no less than a 6-inch clearance from a conduit or raceway bank to each side, and 3-inch clearance to the trench bottom. Clean debris or loose dirt from trench bottom and provide a 3-inch sand base.
 6. Provide a 4 mil thick, 3-inch wide red polyethylene marking tape with foil laminate installed 12 inches above top of all raceways or conduits in all underground installations. Tape to have "CAUTION – ELECTRIC LINE BURIED BELOW" printed continuously. Panduit, Motivator, 3M or equivalent.

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3.03 WIRING AND CABLE INSTALLATION

A. General:

1. Install conductors after conduit system is completed. Care will be taken in pulling conductors such that insulation is not damaged. Use UL-approved wire pulling lubricants as needed.
2. Install and test all cables in accordance with the manufacturer's requirements and warranty.
3. Before pulling conductors or cables, the Contractor shall swab out below-grade raceways.
4. Use 10 AWG, minimum conductor size, for branch circuit homeruns greater than 100 feet.

B. Splicing and Terminating:

1. All aspects of splicing and terminating will be in accordance with the manufacturer's published procedures.
2. All splices in outlet boxes with connectors, as specified herein, will be made with separate tails of correct color. Provide at least 6 inches of tails packed in box after splice is made.
3. Neatly bundle and clamp all wire and cable in panels, control centers, and equipment enclosures.

C. Identification:

1. Identify branch circuit conductors with vinyl wrap-around markers. Where more than two conductors run through a single outlet, mark each circuit with the corresponding circuit number at the panelboard.
2. Identify size No. 6 and larger using phase color markers and identification tags.
3. Provide vinyl marker tape for all terminal strips.

D. Connections to Circuit Breakers, Switches, and Terminal Strips, Stranded Copper Conductors:

1. No. 12 through 8 AWG: Terminate using locking-tongue style, compression-type lugs, or by connectors supplied by the manufacturer.

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- E. Joints in Wires in Dry Locations, Copper Conductors:
 - 1. No. 8 AWG and Smaller: Use cap or twist-on, spring-type solderless connectors. Self-stripping tap connectors shall not be acceptable.
 - 2. No. 6 AWG and Larger: Use split-bolt connectors or compression sleeves. Insulate joints with rubber tape and protected with half-lapped layers of vinyl-plastic electrical tape. Insulation may also be provided by UL-listed pre-manufactured components such as heat-shrink or cold-shrink devices.
- F. Joints in Wires in Moist Locations, Copper Conductors: Secure as specified above, then encapsulated in epoxy (Scotchcast or approved equal).
- G. Grounding:
 - 1. Permanent Ground Enclosures of Equipment, Raceways, and Fixtures: Install a copper-insulated green equipment grounding conductor in all branch circuit and feeder raceways. Equipment ground shall originate at panelboard ground bus and be bonded to all outlet boxes and electrical equipment enclosures. Connect receptacle ground terminals to the equipment grounding conductor by an insulated copper conductor.
 - 2. Panelboards Having Multiple-Ground Buses: Buses are to be bonded together by using 6 AWG (minimum) conductor; using panelboard interior support structure as a bonding medium is not acceptable.
- H. Signal Wiring:
 - 1. Identify wire used for alarm and control signal applications at both ends and referenced to appropriate Record Drawings. Refer to Section 01720 for additional information.
 - 2. Identify control wiring in accordance with record control diagrams.

3.04 CONCRETE VAULTS, SPLICE BOXES, AND HANDHOLES

- A. Do not locate boxes in roadways unless specifically approved by the Resident Engineer.
- B. Make all precast joints walls, risers, and conduit entrances watertight using cement grout or sealant. Use cement grout consisting of two parts sand and one part cement and sufficient water to form a plastic slurry. Apply in a manner to insure filling of all joint voids and conduit entrances.
- C. Excavation and bedding: Excavation must allow for overall assembled height of boxes plus added height of risers and bedding material consisting of 6-inch

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compacted sand or gravel. Provide a minimum 4-inch clearance around the box exterior walls.

- D. **Setting:** Assemble boxes by lowering each section into the excavation. Lower, set and level base sections in place. The seal surfaces between sections must be cleaned and have gaskets in place before placing next section. Excavation hole must not contain water when setting the box.
- E. **Backfilling:** Provide compactable material such as pea gravel or sand. Not acceptable to use material such as saturated soil or material containing large rocks or chunks. Backfill after box completely installed and compact progressively from the bottom to the top surface.

3.05 ELECTRICAL TESTING

A. **General:**

- 1. Provide all materials, supplies, tools, equipment, labor, and services required to perform all tests as specified in this Section.
- 2. Submit test reports for approval by the Resident Engineer.
- 3. Correct all deficiencies revealed by tests. Replace at Contractor's cost, all materials and equipment found faulty.
- 4. Contractor shall furnish the services of an independent electrical testing firm acceptable to the Resident Engineer to conduct all testing. Contractor may perform low-voltage wire and cable meggering.
- 5. Maintain a written record of all tests showing date, personnel making test, equipment or material tested, tests performed, manufacturer and serial number of testing equipment and results.
- 6. Contractor shall be responsible for any damage to equipment or material due to improper test procedures or test apparatus handling, and shall replace, at his cost, or restore to original condition any damaged equipment or material.
- 7. It is the intent of these tests to assure that all electrical equipment is operational within industry and manufacturer's tolerances and is installed in accordance with design specifications.
- 8. The tests and inspections will determine the suitability for energization.
- 9. The InterNational Electrical Testing Association (NETA) guidelines are to be used for the testing procedures and acceptance tests values of results.

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B. Work Included:

1. Test all wire, cable, equipment, and systems installed or connected under electrical contract to assure proper installation, setting, connection, and functioning in accordance with the Construction Drawings, Specifications, and the manufacturer's recommendations. The intent is that field testing be extensive and complete as specified, to provide assurance of correct installation and operation of equipment.
2. Perform all tests and inspections recommended by the equipment manufacturer, whether required by these Specifications or not, unless specifically waived by the Resident Engineer.
3. Tests shall include, but are not limited to, the following:
 - a. All Wiring: Free of shorts, unintentional, and grounds.
 - b. Molded Case Breakers, 150A and Larger: Time and instantaneous tripping, physical condition, contact resistance, insulation resistance.
 - c. Power Circuit Breakers: Calibration to time/current curves, physical condition, contact resistance, insulation resistance.
 - d. Grounding System: Ground resistance (impedance), ground integrity.
 - e. High voltage cable.
 - f. Motor Controls: Proper overload sensing, insulation resistance.
 - g. Ground Fault System: Neutral free of improper grounds, pick-up, coordination, zone interlocking. Submit certified test report to the Resident Engineer.
 - h. Protective Relays: Pick-up, timing, insulation resistance, physical condition.
 - i. Switchboards, Panelboards, Bus Ducts, etc.: Insulation resistance, physical condition, proper torque on connections.
 - j. Feeder Cables and Motor-Branch Power Conductors: Insulation resistance.
 - k. Motors: Proper rotation, insulation resistance.

C. Minimum Acceptable Test Results:

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1. Ground System: The main ground electrode system resistance to ground no greater than 5 ohms.
2. Electrical Apparatus and Systems Insulation Resistance:

Maximum Voltage Rating of Equipment	Minimum Test Voltage D.C.	Minimum Insulation Resistance in Megohms
250	500	25
600	1,000	100
5,000	2,500	1,000
8,000	2,500	2,000
15,000	2,500	5,000
25,000	5,000	20,000

3. Low Voltage Cables (600V maximum):

Maximum Voltage Rating of Equipment	Minimum Test Voltage D.C.	Minimum Insulation Resistance in Megohms
300	500	2
600	1,000	2

3.06 PROTECTION

- A. General: Conduits, junction boxes, outlet boxes, and other openings shall be kept closed to prevent entry of foreign matter. Cover fixtures, equipment, and apparatus for protection against dirt, paint, water, chemical or mechanical damage, before and during the construction period. Restore damaged fixtures, apparatus, or equipment to original condition prior to final acceptance, including restoration of damaged shop coats of paint at no additional cost to the County. Protect brightly finished surfaces and similar items during construction. No rust or damage will be permitted.

3.07 WORKMANSHIP

- A. General:
 1. Preparation, handling, and installation shall be in accordance with the manufacturer's written instructions and technical data particular to the product specified or approved.

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2. Coordinate and cooperate the installation with other trades.
3. Work will conform to the National Electrical Contractor's Association Standard of Installation for general installation practice.

END OF SECTION

**CONSTRUCTION
QUALITY ASSURANCE
AND QUALITY
CONTROL PLAN**

BUENA VISTA LANDFILL PHASE I WMU FINAL COVER RECONSTRUCTION

CONSTRUCTION QUALITY ASSURANCE AND QUALITY CONTROL PLAN

NOVEMBER 2022

Prepared for:

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Certification

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Please feel free to call the undersigned if you have any questions or comments.

Sincerely, Aptim Environmental and Infrastructure, Inc.



Christopher Richgels, PE
Civil Engineer



1.0 INTRODUCTION

This plan addresses the Construction Quality Assurance (CQA) procedures required during the reconstruction of the Phase I WMU Final Cover system at the Buena Vista Landfill near Ione, California.

1.1 Performance Standards

This CQA Plan establishes procedures to verify that construction is in accordance with the approved engineering standards, Drawings and Specifications, meets the appropriate regulatory requirements, and develops the necessary documentation for submittal to the regulatory agencies.

The objective of this plan is to establish:

- Duties of parties responsible for the CQA program;
- Qualification requirements of the CQA Engineer(s);
- Inspection activities;
- Sampling strategies;
- Document control measures;
- Procedures for approving the materials used for construction;
- Methods for assuring compliance to design standards and Project Specifications during construction;
- Procedures for resolving issues that may occur concerning the design and construction; and
- Documentation of construction and testing for submittal to the regulatory agency for their review.

The intent of the CQA Plan is to provide independent third party verification and testing to demonstrate that the Contractors and Installers have met their obligations in the supply and installation of components and materials according to the design documents, Project Specifications, and regulatory requirements. Quality control is provided by the Manufacturers, Installers, and Contractors and refers only to their actions taken to ensure that materials and workmanship meet the requirements of the Construction Drawings and Project Specifications.

2.0 PARTIES INVOLVED WITH CONSTRUCTION QUALITY ASSURANCE

The following section provides descriptions of the parties referred to in this Construction Quality Assurance Plan (CQA Plan) including their responsibilities and qualifications.

2.1 Owner/Operator

The Amador County Waste Management Department (Amador) is the Owner and Operator of this landfill. For the purposes of this CQA Plan and the Project Specifications, all references to the Owner or Operator shall mean Amador.

2.2 Project Manager

The Project Manager is the official representative of the Owner and is responsible for construction activities at the facility, including oversight and construction management. The Project Manager is responsible for coordinating construction and monitoring quality assurance activities for the project. The Project Manager shall be responsible for the resolution of all quality assurance issues that arise during the Cover system construction and must be involved in any decisions that may affect future operations at the landfill.

2.3 Design Engineer

The Design Engineer, also referred to as the Project Manager, is the individual or firm responsible for the design and preparation of the project construction drawings (Drawings) and the technical specifications (Project Specifications). The Design Engineer is responsible for approving all design and project specification changes, modifications, or clarifications encountered during construction.

2.4 CQA Engineer and CQA Monitor(s)

The CQA Engineer and CQA Monitors(s) will be responsible for understanding this CQA Plan and shall conduct CQA testing, monitoring, documentation and reporting, as required by this CQA Plan. The CQA Engineer will be the engineer-of-record and will stamp the final report. The CQA Engineer is responsible for implementation of the CQA Plan and shall provide supervision of the CQA activities. The CQA Engineer shall be a California registered civil engineer or engineering geologist experienced in the construction of landfill cover systems. The CQA Engineer will communicate directly with the Project Manager.

2.5 Geosynthetics Manufacturer

The geosynthetics manufacturer(s), also referred to as the "Manufacturer," is responsible for production of the geosynthetic components outlined in this plan. The Manufacturer may be affiliated with the Geosynthetics Installer. Each Manufacturer must pre-qualify that they are able to produce material that meets the requirements of the Project Specifications. The Geosynthetics Manufacturer will submit materials and documentation to the Project Manager or Geosynthetics Installer.

2.6 Geosynthetics Installer

The Geosynthetics Installer, also referred to as the "Geosynthetics Installation Contractor" or the "Installer," is responsible for proper installation of the geosynthetic components, in accordance with the Project Drawings and Specifications. The Installer shall also be responsible for procurement of the geosynthetic materials in conformance with the Project Specifications unless otherwise arranged by the Owner. The Installer may be affiliated with the Manufacturer. The Installer typically works as a subcontractor to the Earthworks Contractor.

The Installer must meet the experience requirements outlined in the Project Specifications. The Installer shall provide a qualified Superintendent who will provide full-time technical guidance to the field crew. The Superintendent will represent the Installer at all site meetings and will act as the spokesman for the Installer on the project.

Welding technicians will be evaluated based on performance. The CQA Engineer, through the Project Manager, reserves the right to reject any welding technician whose performance is unsatisfactory.

2.7 Earthworks Contractor

The Earthworks Contractor, also referred to as the "Contractor," is responsible for completion of the site work as defined by contract with the Owner and in accordance with the Drawings and Specifications except for materials provided by the Owner or Geosynthetics Manufacturer and work performed by the Geosynthetics Installer if independently contracted. The Earthworks Contractor shall have previous experience constructing similar Cover systems. The Earthworks Contractor will be responsible for retaining a surveyor to set lines and grades required for excavation and construction. The Earthworks Contractor will be contracted with the Owner and will communicate directly with the Project Manager.

2.8 CQA Surveyor

The CQA Surveyor is the firm or individual responsible for performing the quality assurance surveying tasks outlined in this plan, including the preparation of stamped as-built survey record drawings to be included in the CQA Certification Report. CQA surveying shall be performed under the direction of a California State Licensed Land Surveyor. The CQA Surveyor may be contracted with the Earthworks Contractor or the Owner. The CQA Surveyor will communicate directly with the Earthworks Contractor or Owner.

2.9 Independent CQA Laboratory

The Independent CQA Laboratory (CQA Lab) is the third party responsible for performing the quality assurance soils and/or geosynthetics laboratory testing tasks listed in this CQA Plan in accordance with the specified methodology. Standards for testing include, but are not limited to American Society for Testing and Materials (ASTM), California Department of Transportation (Caltrans) California Test Methods (CTM), or Geosynthetic Institute (GSI) methods. The CQA Lab is directed by the CQA Engineer and may be affiliated with the CQA Consultant firm or company. The geosynthetics-testing laboratory shall be accredited by the Geosynthetics Accreditation Institute Laboratory Accreditation Program (GAI-LAP). The CQA Lab shall not be affiliated with the Earthworks Contractor or Geosynthetics Installer. The CQA Lab will communicate directly with the CQA Engineer.

2.10 Meetings

Meetings shall be held during the life of the project to enhance coordination among the various parties involved. Meetings will include a Pre-construction Meeting, Progress Meetings, and Resolution Meetings if necessary.

2.10.1 Pre-Construction Meeting

A pre-construction meeting will be held at the site prior to the start of construction. The Design Engineer, Project Manager, CQA Monitor, CQA Engineer, Geosynthetics Installer, Earthworks Contractor, and others designated by the Operator shall attend this meeting. The purpose of this meeting will at a minimum:

- Define the CQA management organization for the Project including, lines of communication, responsibility, and authority;
- Conduct a site inspection to discuss work areas, work plans, stockpiling, lay-down areas, access roads, haul roads, and related items;
- Review the project schedule;
- Review the Construction Drawings, CQA Plan, and Project Specifications; and
- Review work area security and safety protocol.

The CQA Engineer or his designee will document this meeting and copies of the meeting minutes will be distributed to all parties. The information in this documentation shall be used in drafting the final CQA report (ref. Section 5.7).

2.10.2 Progress Meetings

Weekly progress meetings will be held. At a minimum, the CQA Engineer, the Project Manager and the Contractor(s) will attend these meetings. The CQA Engineer is responsible for organizing and conducting the progress meetings. The purpose of these meetings will be to:

- Review the previous week's accomplishments and activities;
- Review upcoming scheduled work and project milestones;
- Discuss any problems or potential construction problems; and
- Review the results and status of CQA field and laboratory testing.

The CQA Engineer will document these meetings and the minutes shall be transmitted to all in attendance.

2.10.3 Resolution Meetings

Special meetings will be held, as needed, to discuss and resolve potential problems or deficiencies. At a minimum, these meetings will be attended by the Project Manager, CQA Engineer, CQA Monitor, and the Installer and/or Contractor. If the problem relates to a design issue, the Design Engineer shall also be present. The CQA Monitor will document the meeting.

When deficiencies (items that do not meet project requirements) are discovered, the CQA Monitor or CQA Engineer shall immediately determine the nature and extent of the problem and notify the Installer or Contractor. If unsatisfactory test results identify a deficiency, additional tests will be performed to define the extent of the deficient material or work area.

The Installer or Contractor shall correct the deficiency to the satisfaction of the CQA Monitor. If unable to correct the problem, the CQA Monitor will notify the CQA Engineer who will assist during problem resolution. If the solution involves a design revision, the Project Manager shall also be contacted. Design revisions can only be made by the Design Engineer.

The corrected deficiency shall be re-tested and approved before any additional related work is performed by the Installer or Contractor. Retest results shall be recorded by the CQA Monitor and included in the final report documentation (ref. Section 5.7).

3.0 EARTHWORK CONSTRUCTION QUALITY ASSURANCE

Construction of the landfill final cover system or specified earthwork must be in accordance with the approved Construction Drawings and Project Specifications. This CQA Plan establishes the construction quality assurance monitoring and testing program designed to ensure construction compliance. The earthwork quality assurance testing program consists of testing of soil and rock materials used in the landfill facility. Quality assurance testing and observation is required during construction of the low-permeability soil layer test pad, the low-permeability barrier layer, and during construction of other Cover system components.

3.1 Construction Monitoring and Testing

All components of the construction shall be observed and tested as required by the CQA Monitor to verify that the construction is in accordance with the Project Specifications. The CQA Engineer shall review the work performed by the CQA Monitor and identify inadequate construction methodologies or materials that may adversely impact the performance of the facility being constructed and/or existing structures. Visual observations and verification of the independent survey required for specific layers throughout the construction process shall be made to evaluate whether the materials are placed to the lines and grades as shown on the Drawings.

The CQA Monitor or CQA Engineer will give the Project Manager sufficient notice of anticipated completion of the construction components so that related CQA documentation may be reviewed and accepted without delay to the contractor. Specific CQA observations and/or testing are required for the following:

- Subgrade preparation;
- General fill;
- Foundation soil layer;
- Vegetative soil cover;
- Geosynthetics
- Aggregate base; and

3.1.1 Subgrade Preparation

Subgrade preparation shall be performed on the existing foundation layer cover soils prior to construction of the cover system. The CQA Monitor shall observe and document the subgrade preparation including:

- Monitoring the stripping of vegetated soil and growth media to be stockpiled in the area designated by the Project Manager;
- Monitoring that appropriate dust control measures are implemented;
- Visually inspecting the surface for moisture seeps, soft or excessively wet areas, and unstable slopes;
- Monitoring subgrade preparation and confirming that the surface of the cover system subgrade is firm, unyielding, and of specified depth;

- Verify that the CQA Survey has been completed and that the Record Drawings furnished by the surveyor indicates compliance with the lines, grade, elevations, and tolerances as indicated by the Project Drawings and Specifications; and

3.1.2 General Earthworks Construction Testing

The general earthworks component of the cover system primarily includes the general fill materials. General fill materials will be imported from pre-approved sources designated by the Owner. CQA observation and/or testing are required during construction to verify that the materials and construction are in accordance with the Project Specifications. The tests to be performed, including minimum testing frequency, are presented in Table 1. The testing frequencies specified in Table 1 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

**TABLE 1
 GENERAL FILL CONSTRUCTION TESTING FREQUENCY**

Test Designation	ASTM Designation	General Fill
Moisture-Density ¹	D1557	1 Per 10,000 CY or Each Material Type
Nuclear Moisture-Density ²	D6938	1 Per 1,500 CY
Sand Cone Test, or Drive Cylinder Test ³	D1556 D2937	1 Per 20 Nuclear Density Tests
Moisture Content	D2216/D4643	As Necessary to Check Gauge
Particle Size	D6913/D1140	---
Atterberg Limits	D4318	---
Soil Classification	D2487/2488	Each Material Type

Notes to Table 1:

1. Perform a Check Point (One-Point selected at near optimum and compared to the initial ASTM D1557 curve) at least once for every 10,000 cubic yards of material placed.
2. Tests shall be performed on an even grid to provide adequate testing coverage. For large fills in small areas, the testing frequency shall be increased as necessary to insure testing for each lift of soil placed.
3. Drive Cylinder test may be performed on fine-grained clay or silt materials only.

General Fill Placement: Construction observation and monitoring during general fill placement includes:

- Monitoring fill placement to insure that the Contractor obtains materials from the approved sources;
- Observe construction staking to verify that the general fill soils are placed to the lines, grades, and elevations shown on the Drawings;
- Verify that fill is placed in loose lifts that result in a nominal compacted thickness of 6 inches;
- Verify that the Contractor adequately moisture conditions the borrow soils;

- Perform field and laboratory testing in accordance with Table 1 to verify that the fill materials are placed to the moisture and density requirements indicated in the Project Specifications;
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately corrects the areas which do not meet the minimum requirements, or pass/fail criteria, in the construction technical specification and perform retests documenting the corrected area satisfies the minimum requirements of the specifications; and
- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications.

3.1.3 Foundation Layer Construction Testing

The earthworks component of the first layer of the final cover system includes the foundation layer. The existing surface of the foundation layer shall be cleared and grubbed of existing vegetation to a minimum depth of 3 inches. Stripped soil shall be preserved onsite for use as topsoil in the vegetative cover layer. Foundation layer thickness (minimum 1 foot) shall be verified prior to geomembrane placement. Thickness verification shall be performed over a minimum grid of 50-foot center to center (c.c.) on the topdeck. The grid size may be increased on sideslopes to no more than a 100-foot c.c. spacing based on initial 50-foot grid results and in the judgment of the CQA Engineer. Thickness verification shall be performed by excavating in-place foundation soil to the refuse lift immediately beneath the foundation cover. Upon completion of thickness verification testing and clearing and grubbing of existing vegetation, the CQA Engineer shall document the foundation layer is restored to a minimum thickness of 1 foot. Borrow materials for the foundation layer will be obtained from the off-site borrow area, excavations to remove in-place interim cover soils, and areas designated by the Owner.

Existing in-place intermediate cover soils may be used for the foundation layer provided that they meet the specification requirements for the foundation layer as defined by 27 CCR 21090(a)(1). Intermediate cover soils shall be scarified to a minimum depth of six-inches, moisture conditioned to +/- 2 percent of the optimum moisture content and compacted to the minimum relative compaction in the contract specifications (ASTM D1557).

CQA observation and testing are required during construction to verify that the materials and construction are in accordance with the Project Specifications. The tests to be performed, including testing frequency, for the foundation layer are presented in Table 2. The testing frequencies specified in Table 2 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

**TABLE 2
 FOUNDATION LAYER CONSTRUCTION TESTING FREQUENCY**

Test Designation	ASTM Designation	Testing Frequency
Compaction Characteristics	D1557-12	1 Per 10,000 CY or Each Material Type
Nuclear Moisture Density ¹	D6938-17a	1 Per 500 CY
Moisture Content	D2216-19	1 Per 10,000 CY
Particle Size	D6913 / D6913M - 17	1 Per 10,000 CY
Soil Classification	D2487-17/2488-17	1 Per 10,000 CY

Notes to Table 2:

1. Tests shall be performed on an even grid to provide adequate testing coverage. For large fills in small areas, the testing frequency shall be increased as necessary to ensure testing for each lift of soil placed.

Foundation Layer Placement: Construction observation and monitoring during general fill and subgrade preparation/foundation layer placement includes:

- Monitoring subgrade preparation and compaction characteristics of in-place intermediate cover soils for compliance with foundation layer specification requirements.
- Monitoring fill placement to insure that the Contractor obtains materials from the approved source(s);
- Observe construction staking to verify that the foundation layer soils are placed to the lines, grades, and elevations shown on the Drawings;
- Verify that fill, where required, is placed in loose lifts that result in a nominal compacted thickness of 6 inches;
- Verify that the Contractor adequately moisture conditions the material prior or during placement;
- Perform field and laboratory testing in accordance with Table 2 to verify that the fill materials are placed to the moisture and density requirements indicated in the Project Specifications;
- Verify that the foundation layer materials are suitable for supporting geosynthetic materials;
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately reworks the areas which do not meet the construction technical specifications and perform retests documenting the reworked area satisfies the minimum requirements of the specifications ; and
- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications.

3.1.4 Gravel Placement

Gravel components utilized for the final cover system include aggregate base. The aggregate base material is utilized as the wearing surface for the material storage yard. Both pre-construction and construction testing are required for the gravel materials. Pre-construction testing consists of testing proposed materials from samples obtained at the aggregate source. Construction testing consists of testing performed from samples obtained during delivery of materials during construction. The tests to be performed, including testing frequency, for each material type are presented in Table 3. The testing frequencies specified in Table 3 may be increased when construction conditions warrant additional tests. Additional testing may be performed on suspect materials as recommended by the CQA Engineer.

**TABLE 3
GRAVEL TESTING FREQUENCY**

Test Designation	ASTM Designation	Aggregate Base
Sieve Analysis	D6913/C136	1 Per Source1 1 Test Per 500 CY
Visual Classification	D2488-17	Continuous Observation

Notes to Table 3:

1. One test required for each source as a pre-construction test requirement. Additional testing is required at the specified frequency during construction.

The CQA Monitor shall observe that care is taken when placing the drainage gravel in the drainage trenches and that the underlying materials including geocomposite and HDPE piping is not damaged during placement operations. The CQA Monitor shall observe and document that appropriate equipment is used. If the equipment or gravel placement procedures do not comply with the Project Specifications, the geocomposite shall be exposed and inspected for potential damage.

Construction observation and monitoring required during gravel placement includes:

- Verification that all pre-construction testing has been performed and that laboratory test results indicate compliance with the Project Specifications. The CQA Monitor shall assure that the Project Engineer and the Contractor receive prompt notification of material conformance;
- Verify that the material upon which the gravel will be placed has been installed in accordance with the Project Drawings and Specifications, and that all required testing, and as-built documentation have been completed;
- Observation and monitoring of the aggregate placement procedures to verify that the minimum thickness is maintained;
- Collect and transmit to the laboratory the required number of gravel samples for testing. Communicate with the laboratory to verify that the materials tested comply with the Project Specifications;
- Visually observe the gravel materials as delivered to the site to inspect for any variability in the aggregate, taking care to observe for variation in gradation, excess fines, excess angular material, or any deleterious material present in the drainage gravel and aggregate base; and

- Verify that the CQA Survey has been completed and that the Record Drawings furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications.

3.1.5 Preparation of Compacted Clay Liner Subgrade

- In some areas of the project, compacted clay liner (CCL) subgrade must be prepared. The intent of subgrade preparation specifications is to provide a firm base upon which the CCL can be installed. In order to ensure a firm subgrade, the specifications require that the Contractor proof-roll the liner subgrade using equipment acceptable to the CQA Officer. The following procedures shall be taken to prepare the top of subgrade:
- The top of subgrade shall be graded to specified design elevations as approved by the CQA Officer prior to commencing CCL placement. The subgrade shall be firm, in an unfrozen state, and free of organics, topsoil, and debris, deleterious materials, and standing or running water.
- Unsuitable materials, as defined herein, shall be over-excavated and removed from the subgrade. Unsuitable materials include: organic debris, materials that are saturated, and any materials that do not provide a firm subgrade on which to place the CCL.
- Soft, unstable or pumping fill / soils that do not provide a sufficiently firm subgrade so as to allow the placement of the CCL shall be removed to such a depth so that, when backfilled, the subgrade onto which the CCL is to be placed is firm. Such over-excavations shall be backfilled with suitable soil fill approved by the CQA Officer.
- The top of subgrade surface upon which the CCL is installed shall be smooth, free of wheel ruts, debris, roots, sticks, vegetation, voids, large cracks, standing water, and any deleterious materials. Site specific compaction requirements should be followed in accordance with the project plans and specifications.
- Grade subgrade to a tolerance of plus or minus 0.10 foot of straight line grade between any two points 10 feet apart.
- Immediately prior to construction of the CCL, the subgrade shall be scarified to create a firm bond between layers.
- Site specific compaction requirements should be followed in accordance with the project drawings and specifications. At a minimum, the level of compaction should be such that minimal rutting is caused by installation equipment or other construction vehicles which traffic the area of deployment (typically 85% of modified proctor or greater).

3.1.6 Compacted Clay Liner

The CCL shall have a maximum hydraulic conductivity of 1×10^{-6} cm/sec. According to the site cover investigation report, this is achievable by constructing the CCL to a minimum relative density of 90% at a moisture content of 3-5% over optimum. CQA observation and testing are required during construction to verify that the materials and construction are in accordance with the Project Specifications. The tests to be performed, including testing frequency, for the foundation layer are presented in Table 4. The testing frequencies specified in Table 4 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

**TABLE 4
 COMPACTED CLAY LINER CONSTRUCTION TESTING FREQUENCY**

Test Designation	ASTM Designation	Compacted Clay Liner (CY)
Visual Soil Description	D2488-17a	Continuous
Soil Classification	D2487-17	10,000
Compaction	D1557-12	10,000 (min 2 tests)
Particle Size Gradation	D6913 / D6913M - 17	10,000
#200 Sieve Wash	D1140-17	10,000
Atterberg Limits	D4318- 17	10,000
Hydraulic Conductivity	D5084-16a	10,000 (min 2 tests)
Moisture Content)	D2216-19	10,000
In-Place Moisture & Density (Nuclear) ¹	D6938-17a	250

Notes to Table 4:

1. Tests shall be performed on an even grid to provide adequate testing coverage. For large fills in small areas, the testing frequency shall be increased as necessary to ensure testing for each lift of soil placed.

Construction observation and monitoring during CCL placement includes:

- Monitoring subgrade preparation and compaction characteristics of in-place intermediate cover soils for compliance with foundation layer specification requirements.
- Monitoring fill placement to ensure that the Contractor obtains materials from the approved source(s);
- Observe construction staking to verify that the CCL soils are placed to the lines, grades, and elevations shown on the Drawings;
- Verify that fill, where required, is placed in loose lifts that result in a nominal compacted thickness of 6 inches;
- Verify that the Contractor adequately moisture conditions the material prior or during placement;
- Perform field and laboratory testing in accordance with Table 1 to verify that the fill materials are placed to the moisture and density requirements indicated in the Project Specifications;
- Verify that the foundation layer materials are suitable for supporting geosynthetic materials;
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately reworks the areas which do not meet the Project Specifications and perform retests documenting the reworked area satisfies the minimum requirements of the specifications; and
- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications.

3.1.7 Vegetative Soil Layer

CQA observation and testing are required to verify that the material is placed in accordance with the Project Specifications. Observation includes verification that the material is properly placed. In addition, CQA observation includes verification that construction activities do not damage underlying components of the cover system.

The tests to be performed, including testing frequency, for the vegetative layer are presented in Table 5. The testing frequencies specified in Table 5 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

**TABLE 5
VEGETATIVE SOIL LAYER CONSTRUCTION TESTING FREQUENCY**

Test Designation	ASTM Designation	Test Frequency
Compaction Characteristics	D1557-12	1 Per 10,000 CY or Each Material Type
Particle Size	D6913 / D6913M - 17	1 Per 10,000
Soil Classification	D2487-17/2488-17	1 Per 10,000 CY

Vegetative Soil Layer Placement: Construction observation and monitoring during vegetative soil layer placement includes:

- Inspection of the geosynthetic subgrade for damage caused during vegetative soil placement;
- Inspection of geosynthetic monitoring records for compliance with geosynthetic specification requirements.
- Monitoring fill placement to insure that the Contractor obtains materials from the approved source(s);
- Observe construction measurements to verify that the vegetative layer soils are placed to the lines, grades, and elevations shown on the Drawings;
- Verify that the initial lift of vegetative soil cover is placed in loose lifts that result in a nominal compacted thickness of 12 inches;
- Verify that soil spreading equipment is in compliance with the specified ground pressure and is operating on a soil thickness of no less than 12 inches;
- Verify soil hauling equipment is in compliance with the specified ground pressure and is operating on a soil thickness of no less than 24-inches;
- Verify that the Contractor adequately moisture conditions the material prior or during placement;
- Perform field and laboratory testing in accordance with Table 4 to verify that the fill materials are placed to the moisture and density requirements indicated in the Project Specifications;
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately reworks the areas which do not meet the construction technical specifications and perform retests documenting the reworked area satisfies the minimum requirements of the specifications; and

- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications.

3.2 CQA Surveying

CQA surveying shall be conducted such that all applicable standards are followed. The CQA Surveyor shall furnish "As-Built Survey Record Drawings" (also referred to as "as-built" drawings) for review by the CQA Engineer. The CQA Surveyor shall provide confirmation that surveyed materials are constructed to the lines and grades identified in the Project Drawings and Specifications. The CQA Monitor shall review and approve the drawings prior to placement of a new system component over the work. Required Record Drawings shall be as specified in the Project Specifications. All CQA surveying shall be performed under the direction of a surveyor licensed to perform such work in the State of California. All Record Drawings shall be signed and sealed by the licensed surveyor who directed the CQA survey work. Record drawings shall be at a scale not smaller than 1 inch = 50 feet. The accuracy of the surveying shall be sufficient to determine if the measurements are within the tolerances specified in the Project Specifications and Design Drawings.

The required surveying of cover system elevations shall be carried out on a 50-foot square grid at the locations designated on the Design Plans. The grid points for each successive earthworks layer shall have the same horizontal locations for comparison of layer thickness. Additional survey locations shall be recorded to define the following features in the cover system: toe of slope, hinge of slope, grade breaks, sumps, anchor trench, drainage system piping, and drainage ditches. The thicknesses of the geosynthetic cover system components on the Design Drawings shall be interpreted as negligible.

4.0 GEOSYNTHETICS CONSTRUCTION QUALITY ASSURANCE

Construction of the specified geosynthetics must be in accordance with performance requirements of the approved Design Drawings and Project Specifications including limiting water infiltration to the waste mass. Construction observations shall verify the constructed system satisfies the performance standards of the closure design regarding:

- Typical construction stresses imparted to the geosynthetics such as those associated with stormwater concentrated flow;
- Differential settlement that may be reasonably expected during construction activities; and
- The finished final cover system was constructed in compliance with typical construction practices and the contract specifications such that a service life through the postclosure period can be reasonably expected.

This Quality Assurance program also consists of reviewing Geosynthetics Manufacturer's and Installer's Quality Control submittals, material conformance testing, construction monitoring and testing.

The types of geosynthetic materials used in the cover system construction include geosynthetic turf. These geosynthetic materials are defined in the Project Specifications. Prior to and during construction, these geosynthetic materials shall be sampled and tested to determine if they conform to Project Specifications. All geosynthetic conformance testing shall be the responsibility of the CQA Engineer.

4.1 Review Quality Control Submittals

Prior to geosynthetic materials installation, the CQA Engineer shall review the Geosynthetic Installation Contractor's Quality Control submittals to confirm that materials meet Project Specifications. The CQA Engineer shall review the following submittals for each geosynthetic material specified for the Project:

- Geosynthetic material samples, name of Manufacturer, and minimum material certifications which shall include the Manufacturer's minimum physical properties of the material, test methods (ASTM and GSI Standards) used, and factory and site seaming methods;
- Manufacturer's Quality Control Manual followed during the manufacturing process;
- The origin (supplier's name and production plant), identification (brand name and lot number) and material properties of the resin used to manufacture the product;
- Observe delivery and unloading of geosynthetic materials to the site to verify that the materials are properly labeled according to the submittals and are not damaged;
- Geosynthetics Installation Contractor's Quality Control Manual, for the installation and testing of the geosynthetics;
- Resumes of the Installation Superintendent, Master Seamer, and Seamers to be assigned to this project (geomembrane only);
- Certification that both the Installation Superintendent and the Master Seamer have reviewed this Construction Quality Assurance Plan, Project Specifications and Drawings;

- A copy of the Quality Control Certificates on each lot of resin issued by the resin Supplier for the specific material for this project. Geomembrane submittals shall include certification of the resin for extrusion welding rod;
- The result of quality control testing conducted on the resin used in manufacturing the specific material for this project;
- A listing which correlates the resin to the individual geosynthetic rolls and extruded materials;
- A copy of the geosynthetic roll Quality Control Certificates which shall be supplied at a minimum frequency of one (1) per every fifty thousand (50,000) square feet of geosynthetic material continuously produced and supplied to the project unless otherwise presented in the Project Specifications;
- A panel layout drawing for geomembrane showing the proposed installation layout identifying field seams as well as any variance or additional details which deviate from the Design Drawings;
- A detailed installation schedule for the project; and
- Certification that the extrusion welding rod to be used is comprised of the same resin type as the geomembrane to be used (geomembrane only).

4.2 Conformance Testing

Prior to geosynthetic installation, the CQA Engineer shall obtain samples of the geosynthetics for conformance testing to evaluate or confirm that these materials meet Project Specifications. The conformance testing frequency shall be at a rate of 1 per 150,000 square feet, or one sample per lot, whichever results in the greater number of conformance tests. Samples shall be taken across the entire width of the roll and shall not include the first 3 feet. The samples shall be a minimum of 3 feet wide by the roll width. The CQA Engineer shall mark on the sample the machine direction, roll number, and the date the sample was obtained, and forward the sample to the geosynthetic laboratory.

All conformance tests shall be performed in accordance with the Project Specifications. The CQA Engineer shall review the test results and shall report any nonconformance to the CQA Monitor, the Project Manager, and the Geosynthetics Installation Contractor.

4.3 Geosynthetics Construction Monitoring and Testing

All geosynthetic components of the construction shall be monitored and tested to verify that the construction is in accordance with the Project Specifications. The CQA Engineer shall identify inadequate construction methodologies or materials that may adversely impact the performance of the facility being constructed and existing structures. Visual observations throughout the construction process shall be made to evaluate whether materials are placed to the lines and grades as shown on the Drawings.

The CQA Monitor shall review the following submittals provided by the Geosynthetics Installation Contractor during the project:

- Quality control documentation recorded during installation;
- Daily reports detailing arrival and departure times, the personnel present on-site, the progress of the work, the arrival of materials, and any problems encountered; and

- Subgrade surface acceptance certificates for each area to be covered by the cover system, signed by the Geosynthetics Installation Contractor's Superintendent.
- The CQA Monitor shall observe and document the geosynthetic installation including:
 - Delivery and unloading of geosynthetic materials to the work area to verify that the materials are not damaged and are properly labeled;
 - Obtaining geosynthetic packaging identification slips for verification and generation of an on-site materials inventory;
 - Subgrade conditions prior to geomembrane installation and verify that any deficiencies (e.g. surface irregularities, protrusions, excessively soft areas, stones, desiccation cracks) noted are corrected;
 - Verification that the surveyor has verified all lines and grades;
 - Handling of geosynthetic materials from storage to the work area;
 - Temporary and permanent anchoring of geosynthetics to verify that design and Project Specifications are met; and
 - Verification that required overlap distances are met.

4.3.1 Geotextile

During geotextile installation, the CQA Monitor shall observe and document deployment, adequate overlap, seaming, and repairs to evaluate whether the installation is in accordance with the Project Specifications.

Deployment - The CQA Monitor shall verify that the underlying layers are clean and free of deleterious materials prior to deployment, and anchoring is achieved as specified. The CQA Monitor shall make observations to inspect for the presence of damaged material or the presence of broken needles used in the manufacturing process.

Seams - The CQA Monitor shall verify sufficient overlap and that the specified seam procedures were followed as required in the Project Specifications.

Repairs - The CQA Monitor shall verify that all repairs are performed in accordance with Project Specifications.

Protection – The CQA Monitor shall verify that deployment methods and equipment do not damage underlying materials. The CQA Monitor shall observe and document that all geotextile materials are covered with the approved material and that traffic or hauling equipment does not damage the geotextile during installation of the overlying materials. In the presence of wind, the geotextile shall be securely anchored with sandbags or equivalent.

5.0 DOCUMENTATION

An effective Quality Assurance program depends on thorough monitoring and documentation of all construction activities during all phases of construction. Documentation shall consist of daily record keeping, construction problem resolutions, design and specification changes, photographic records, weekly progress reports, chain of custody forms for test sample tracking, and a certification and summary report. During construction, all documentation shall be kept on site and will be available for review by the Project Manager, CQA Engineer, or CQA Monitors. The Project Manager shall audit the CQA Program at least once per month verifying proper inspection practices and documentation are being performed to provide the necessary documentation and backup supportive of the final CQA report at the end of the project.

No section of the cover system may be covered up until the CQA Monitor or CQA Engineer observes, approves and documents the completed section of the cover system and assures that all requirements have been met by the Contractor or Installer.

5.1 Daily Record Keeping

Daily records shall consist of field notes, observation and testing data sheets, summary of the daily meetings with the Installer and Contractor, and reporting of construction problems and resolutions. This information shall be submitted weekly along with a weekly CQA Summary Report to the CQA Engineer. Copies of all CQA documentation shall be maintained at the site and be made available for review by the Project Manager.

5.2 Soils Observation and Testing Data Sheets

Soils observation and testing data sheets generally include the following information:

- Date, project name, location, and weather data;
- A reduced-scale site plan, or full-scale plots, showing work areas and test locations;
- Descriptions of ongoing construction;
- Summary of test results and samples taken, with locations and elevations;
- Off-site materials received including quarry certificates;
- Test equipment calibrations, if necessary; and
- Signature or initials of the CQA Monitor.

5.3 Geosynthetic Observation and Testing Forms

Geosynthetic observation and testing forms generally include the following information:

- Date, project name, location, and weather data;
- Identification of panel or seam number;
- Numbering system identifying test or sample number;
- Location and identification of repairs and date of repair;
- Length and/or thickness measurements for geosynthetic panels or seams;
- Welding machine temperatures and settings;

- Welding machine and technician identifications;
- Location of tests and test results;
- Identification of testing technicians and time of tests; and
- Signature or initials of the CQA Monitor.

5.4 Construction Problem and Resolution Documentation

Any construction problem which cannot be resolved between the Installer, Contractor, and CQA Monitor may require a special meeting in order to resolve the problem. The problem should be discussed with the Project Manager, CQA Engineer, and Design Engineer if a design issue is involved. Specific written documentation of that problem should be prepared, if warranted, and will generally include the following information:

- Detailed description of the problem;
- Location and cause of the problem;
- How and when the situation or deficiency was identified;
- How the problem was resolved;
- Any measures taken to prevent similar problems in the future; and
- Signature of the CQA Engineer and CQA Monitor.

Copies of all Construction Problem and Resolution Sheets requiring a Resolution Meeting will be submitted to the Project Manager.

5.5 Photo Documentation

All phases of construction shall be sufficiently photographed by the CQA Monitor. Photographs shall be identified by separate photographic log by location, time, date, and name of the person taking the photograph. A camera that records the time and date shall be used. Representative photographs will be included in the certification report.

5.6 Design and Specification Changes

If it is necessary to address design and specification changes, modifications, or clarifications during construction, the CQA Monitor or CQA Engineer will inform the Project Manager who will notify the Design Engineer. Design and specification changes shall only be made with written agreement from the Project Manager and Design Engineer.

5.7 Certification Report

At the completion of construction, a certification report shall be prepared and signed by the CQA Engineer to certify that the work has been performed in compliance with the Design Drawings and Project Specifications and will contain the following general information:

- CQA organization structure and chain of command/communication;
- Documentation on the contractor's experience and training for each construction phase;

- Summary of construction activities;
- Frequency of CQA inspections;
- Observation and test data summary sheets;
- Sampling, testing locations, frequencies, procedures, testing equipment calibration records, and test results;
- CQA Laboratory quality assurance and quality control procedures;
- Copies of ASTM Standards for test procedures utilized for the project shall be included as an appendix to the certification report (hard copies only);
- Pass/fail criteria for sampling and testing methods used and a discussion of significant construction problems and the resolution of these problems;
- Changes to the Design Drawings or Project Specifications and the justification for these changes;
- Record drawings; and
- A certification statement signed and sealed by the CQA Engineer, a civil engineer (PE) or engineering geologist (CEG) registered in the State of California, by whom the CQA activities were supervised and work performed in responsible charge.

The as-built record drawings shall be prepared by the CQA Surveyor and shall accurately locate all construction items including the lines, grades, and thickness of all soil components for the cover system.

CONSTRUCTION QUALITY ASSURANCE PLAN
BUENA VISTA LANDFILL
CLASS 2 SURFACE IMPOUNDMENT LINER IMPROVEMENT DESIGN
6500 Buena Vista Road
Ione, Amador County, California
January 6, 2022

Prepared For:

Mr. Jeffry Gardner
Amador County Waste Management and Recycling Department
810 Court Street
Jackson, California, 95642



N|V|5

2525 Natomas Park Drive, Suite 300
Sacramento, California, 95833

226220-0000115.00

January 6, 2022
Project No. 226220-0000115.00

Mr. Jeffry Gardner
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810 Court Street
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REFERENCE: **Buena Vista Landfill**
6500 Buena Vista Road, Lone, Amador County, California

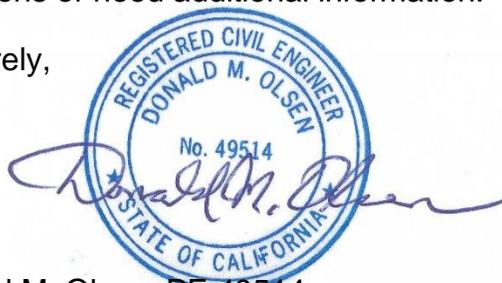
SUBJECT: **Class 2 Surface Impoundment Liner Improvement Design**
Construction Quality Assurance Plan

Dear Mr. Gardner,

NV5, as part of the APTIM-NV5 consulting team, prepared the enclosed Construction Quality Assurance (CQA) Plan for the Class 2 Surface Impoundment (Leachate Pond) Liner Improvement Design project per the requirements of the Amador County, June 18, 2020, Request for Qualifications 20-06 for Engineering Design Services for the Buena Vista Landfill Project. This CQA Plan in conjunction with the relevant sections of the Technical Specifications and with the Class 2 Leachate Pond Liner Rehabilitation Design Construction Drawings N1 through N9 are intended to be a complete set of construction documents.

This CQA Plan should not be relied upon without review by NV5 if a period of 24 months elapses between the issuance report date shown above and the date when construction commences. NV5 appreciates the opportunity to provide engineering services for this important project. Please contact the undersigned below at 916-641-9100 if you have any questions or need additional information.

Sincerely,
NV5



Donald M. Olsen, PE 49514,
Associate Engineering
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Patrick F. Dunn, PG 7001, CHG 900
Senior Hydrogeologist

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1 SECTION I - GENERAL CQA INFORMATION

NV5, as part of the APTIM-NV5 consulting team, in accordance with the Request of Amador County prepared this Construction Quality Assurance (CQA) Plan for the Buena Vista Landfill Class 2 Leachate Pond Rehabilitation Design project located at 6500 Buena Vista Road, Lone, Amador County, California. This CQA Plan in conjunction with the relevant sections of the Technical Specifications and the Class 2 Leachate Pond Liner Rehabilitation Design Drawings N1 through N9 are considered a complete set of construction drawings for this project.

This CQA Plan describes methods and procedures for documenting construction of the new containment components so that a relatively high level of confidence is achieved that the constructed components meet or exceed the contractual and regulatory requirements and will perform as intended during its design life. The CQA Plan is divided into the following sections:

- Section I – General CQA Information
- Section II – Soil and Rock CQA.
- Section III - Geomembrane CQA.
- Section IV – Geocomposite CQA
- Section V – Geotextile CQA
- Section VI – Pipe and Fittings CQA.
- Section VII – Documentation CQA.

Section I presents the following general CQA information: responsible parties, construction scope, units, references, and project controls.

1.1 SCOPE OF CQA SERVICES

This CQA Plan does not address design guidelines, installation specifications, selection of soils, geosynthetics or other associated containment system components. The CQA scope of services presented herein includes methods and procedures for documenting construction and installation of the following containment system components: earthwork and geosynthetics material components, disconnecting and reconnecting electrical power lines to relocated control panels and their associated electrical powered equipment, installation of new underground utility electrical power lines, construction of Ultrablock™ retaining walls, relocating the existing security fence and locking gates, extending existing discharge pipes to the pond, installing new concrete anchor foundation and concrete anchor slab for the spray evaporation system, removal and reinstallation of spray evaporation header and lateral spray HDPE pipes on the new concrete anchor foundation, and removal and reinstallation of the spray evaporation pond pump onto the new concrete anchor slab. . The earthwork liner components include construction and grading general engineered fills, anchor trench backfills, utility trench backfills and preparation of the finished subgrade surface for placement of the geosynthetic liner

components. The geosynthetic liner components include installing the high-density polyethylene (HDPE) geomembrane, and polyvinylchloride (PVC) pond discharge pipes and HDPE header and extended lateral spray pipes. The new underground electrical wires will be installed inside protective plastic conduits to provide electrical power to the spray evaporation pump, landfill gas flare station and leachate detection sump pumps.

1.2 UNITS

All material properties and dimensions are expressed in U.S. customary units as follows:

- Length in feet (ft).
- Volume in cubic yards (cy).
- Thickness in mills or gauge (mills or gauge).
- Weight in pounds force (lbf).
- Torque in foot-pounds (ft-lbf).
- Discharge in gallons per minute or cubic feet per second (gpm or cfs).
- Pressure in pounds per square inch (psi)

1.3 STANDARDS REFERENCES

This CQA Plan includes references to standard test procedures of the following nationally recognized organizations:

- American Society for Testing and Materials (ASTM).
- Federal Test Method Standards (FTMS).
- "Standards for Flexible Membrane Liners" of the National Sanitation Foundation (NSF).
- American Association of State Highway and Transportation Officials (AASHTO).
- The Plastic Pipe Institute (PPI).

1.4 RESPONSIBLE CONSTRUCTION PARTIES

The following identifies the responsible construction parties, necessary qualifications, and responsibilities:

1.4.1 Landfill Owner

The Buena Vista Landfill is owned by the Amador County Waste Management and Recycling Department. The landfill consists of three closed waste management units and only operates a transfer station. Mr. Jeffry Gardner, Director of Waste Management, provides oversight for operations of the landfill by ACES, Inc., environmental monitoring of lysimeters, monitoring wells, gas extraction wells, and leachate subdrains,

implementation of the approved storm water pollution and prevention plan (SWPPP) and general maintenance of the landfill site.

1.4.2 Project Manager/Owner

The Project Manager/Owner is the Owner's representative other than the CQA Manager. The Project Manager will be responsible for coordinating the Contractor's field activities, reviewing, and approving payment requests submitted by the Contractor, processing Contractor's requests for information (RFI), facilitating weekly progress meetings and other meetings as deemed necessary, and preparing and disseminating meeting-minutes to all attendees, among other activities.

1.4.3 Landfill Transfer Station Operator

ACES, Inc. is the present operator of the Buena Vista Landfill Transfer Station.

1.4.4 Design Engineer

The Design Engineer is responsible for the design, drawings, plans, specifications and CQA Plan for construction of the containment system. The Design Engineer will provide interpretations and clarifications, as required, to the CQA Manager.

1.4.5 Contractor

The Contractor is responsible for the preparation of the subgrade soil surface, earthwork grading of cuts, earthfill, geosynthetic material anchor trenches and utility trenches, installation of geosynthetic materials, installation of piping and fittings, constructing retaining walls, disconnecting, and reconnecting electrical power wire and control panels, among other components of the containment systems.

1.4.6 Geosynthetic Materials Manufacturer(s)

The Geosynthetics Manufacturers are responsible for the production of the high-density polyethylene (HDPE) geomembrane, geocomposite drain net, non-woven cushion geotextile and pipe and pipe fittings. The Geosynthetics Manufacturer(s) is responsible for providing quality control testing on products at the required testing frequencies presented in the Technical Specifications. The Manufacturer(s) shall formally submit the test results for the product lots intended to be delivered to the site to the CQA Manager for review and approval prior to delivery of the product to the site.

1.4.7 HDPE Geomembrane Geosynthetic Materials Installer

The HDPE Geomembrane Geosynthetics Material Installer is responsible for field handling of the geosynthetic materials including unloading, storing, deploying, seaming, and placing wind ballast weights among other installation activities. The HDPE Geomembrane Geosynthetic Material Installer shall be a subcontract to the general contractor and may also be responsible for transportation of the geosynthetic materials to the site, and for the preparation, installation, and completion of anchor trenches, pipes, geomembrane panels, and placing and compacting anchor trench backfill soil.

The HDPE geomembrane Geosynthetics Material Installer shall always have on-site one Master Seamer with a minimum experience of 100,000 linear feet of fusion and extrusion HDPE geomembrane seams using the same seaming method and similar equipment that will be used on this project. The HDPE geomembrane Geosynthetic Materials Installer shall always have on-site a Superintendent, who will represent the Installer at all site meetings and be responsible for acting as the Installer's spokesman. The Superintendent must have supervised the installation of a minimum of 2,000,000 square feet of HDPE geomembrane.

1.4.8 Geocomposite Drain Net Geosynthetics Material Installer

The Geocomposite Drain Net Geosynthetics Material Installer is responsible for field handling of the geosynthetic materials including unloading, storing, deploying, seaming, and placing wind ballast weights among other installation activities. The Geocomposite Drain Net Geosynthetic Material Installer shall be a subcontract to the general contractor and may also be responsible for transportation of the geosynthetic materials to the site, and for the preparation, installation, and completion of anchor trenches, pipes, geocomposite panels, and placing and compacting anchor trench backfill soil.

The Geocomposite Drain Net Geosynthetics Material Installer shall always have on-site one Master Seamer with a minimum experience of 100,000 linear feet of geocomposite seams using the same seaming method and similar equipment that will be used on this project. The Geocomposite Geosynthetic Materials Installer shall always have on-site a Superintendent, who will represent the Installer at all site meetings and be responsible for acting as the Installer's spokesman. The Superintendent must have supervised the installation of a minimum of 2,000,000 square feet of geocomposite drain net.

1.4.9 Non-Woven Geotextile Geosynthetics Material Installer

The Non-Woven Geotextile Net Geosynthetics Material Installer is responsible for field handling of the geosynthetic materials including unloading, storing, deploying, seaming, and placing wind ballast weights among other installation activities. The Non-Woven Geotextile Geosynthetic Material Installer shall be a subcontract to the general contractor and may also be responsible for transportation of the geosynthetic materials to the site, and for the preparation, installation, and completion of anchor trenches, pipes, and geotextile panels.

The Non-Woven Geotextile Geosynthetics Material Installer shall always have on-site one Master Seamer with a minimum experience of 100,000 linear feet of geotextile seams using the same seaming method and similar equipment that will be used on this project. The Non-Woven Geotextile Geosynthetic Materials Installer shall always have on-site a Superintendent, who will represent the Installer at all site meetings and be responsible for acting as the Installer's spokesman. The Superintendent must have supervised the installation of a minimum of 2,000,000 square feet of geotextile.

1.4.10 CQA Manager

The CQA Consultant (CQA Manager) is hired by the Owner to provide CQA field observation and testing services for construction of all containment components of the

Class 2 Leachate Pond Liner Rehabilitation Design by the Contractor and his/her subcontractors (Geosynthetic Material Installer). CQA Manager shall review the Contractor's material submittals perform field observations and testing of both soil and geosynthetic materials components, prepare daily field reports to document of the Contractor's progress, completed work products and any problems and their approved resolutions. The CQA Manager will prepare a Final CQA Report that will present the project construction records to document that the liner components meet or exceed the contractual and regulatory requirements of the Technical Specifications and Construction Drawings. The Final CQA Report will be signed and stamped with the seal of a California registered Professional Engineer or Certified Engineering Geologist.

1.4.11 CQA Field Monitor

The CQA Field Monitor works directly under the supervision of the CQA Manager. The CQA Field Monitor will be at the construction site on a full-time basis for the duration of the project. The CQA Field Monitor will make observations perform field testing, will collect, label and package representative field samples for laboratory testing, will communicate field and laboratory test results directly to the contractor when appropriate, will prepare field and laboratory test results summary logs, will prepare daily field reports describing the activities performed by the Contractor, delivery of materials to the site, both passing and failing field tests, weather conditions and any other pertinent information. The CQA Field Monitor will participate in the Weekly Progress Meetings in support of the CQA Manager.

1.4.12 Soils CQA Laboratory

The Soils CQA Laboratory is independent from the Owner and Contractor and is responsible for performing laboratory tests on soil samples collected by the CQA Field Monitor from excavations, on-site stockpiles, or imported to the site to be used to construct the containment system. The Soils CQA Laboratory shall have the equipment and personnel to perform all the American Society for Testing and Materials International (ASTM) laboratory test methods required by the Technical Specifications and Construction Drawings.

1.4.13 Geosynthetics CQA Laboratory

The Geosynthetics CQA Laboratory is independent from the Owner, Contractor, Manufacturer(s), and Geosynthetics Material Installer and is responsible for performing laboratory compliance tests on geosynthetic samples collected by the CQA Field Monitor or his/her representative at the Manufacturer's plant site. The Geosynthetics CQA Laboratory will also be responsible for conducting conformance tests on geosynthetic material samples collected by the CQA Field Monitor in the field at the landfill construction site. The Geosynthetics CQA Laboratory shall have the equipment and personnel to perform all the American Society for Testing and Materials International (ASTM) laboratory test methods required by the Technical Specifications and Construction Drawings.

1.4.14 Land Surveyor

The Land Surveyor shall be a California licensed land surveyor and shall be responsible for measuring the horizontal (latitude and longitude) and vertical (elevations) of the completed liner components. The surveyor shall also be responsible for preparing signed and stamped as-built drawings for inclusion in the Final CQA Report. The land surveyor shall be capable of producing as-built record drawings in hard copy and as electronic media.

1.5 PROJECT CONTROLS AND PROTOCOLS

The CQA project controls and protocols are intended to foster an environment of cooperation and clear communication between all responsible parties involved during construction of the Class 2 Leachate Pond Liner Rehabilitation project. The project controls and protocols are presented hereafter.

1.5.1 Pre-Construction Meeting

A Pre-Construction Meeting will be held at the site to discuss protocols and procedures related to construction of the Class 2 Leachate Pond Liner Rehabilitation. A site walk will be conducted of the construction area and of other areas that will be or may be impacted by the construction work. The pre-construction meeting should be attended by the following responsible parties: Project Manager/Owner, Design Engineer, CQA Manager and Contractor. The CQA Manager will document the issues discussed at the meeting by preparing “meeting minutes” that will be transmitted to all parties within one week after conclusion of the meeting.

The responsible parties attending the pre-construction meeting will discuss, but not be limited to, the following items:

- Class 2 Leachate Pond Liner Rehabilitation Construction Drawings N1 through N9.
- Technical Specifications sections relevant to the Class 2 Leachate Pond Liner Rehabilitation.
- Class 2 Leachate Pond Liner Rehabilitation CQA Plan.
- Storm Water Pollution and Prevention Plan (SWPPP).
- Site Safety Plan.
- Construction parties and their responsibilities.
- Protocols of authority and lines of communication.
- Contractor’s anticipated work schedule for construction of major liner components.
- Identification of storage areas for geosynthetic materials, soil stockpiling and other related liner components.
- Methods for documenting, reporting, and distributing.
- Testing protocols for soil and geosynthetic materials.

- Protocols for handling deficiencies, repairs, and retesting.
- Protocols for writing on the deployed geosynthetic material panels: geomembrane, composite drain net and geotextile.
- Procedures for packaging and storing archive geosynthetic material samples: geomembrane, geocomposite and geotextile.
- Proposed Geosynthetics Material Installer's panel layout and numbering systems for panels and seams: geomembrane, geocomposite and geotextile.
- Protocols for geomembrane destructive sample size.
- Protocols and procedures for geomembrane seam testing.
- Protocols and procedures for geosynthetic materials repairs: geomembrane, geocomposite and geotextile.
- Any other issues of importance brought up by any responsible party attending the pre-construction meeting.

1.5.2 Weekly Progress Meetings

A weekly progress meeting will be held to discuss current progress and activities, planned activities for the next week, current and past deficiencies and the status of their resolutions and any new business or revisions to the work. The CQA Field Monitor will log problems, decisions, or questions arising at this meeting in his daily report. Any matter requiring action that is raised in this meeting will be reported to the appropriate parties. The weekly progress meetings should be attended by the following responsible parties: Project Manager/Owner, CQA Manager, CQA Field Monitor and Contractor. The CQA Manager will document the issues discussed at the meeting by preparing "meeting minutes" that will be transmitted to all parties within one week after conclusion of the meeting.

1.5.3 Non-Compliance Meetings

A non-compliance meeting will be held to discuss any issues and/or Contractor's work products that are not in compliance with the relevant sections of the Technical Specifications and Construction Drawings N1 through N9 for the Class 2 Leachate Pond Liner Rehabilitation Design. The purpose of the non-compliance meetings is to define and resolve the Contractor's non-compliant or deficient issue or work product. The non-compliance meetings should be attended by the following responsible parties: Project Manager/Owner, CQA Manager, CQA Field Monitor and Contractor. If the problem requires a design modification, then the Design Engineer should also be present. The CQA Manager will document the issues discussed at the meeting by preparing "meeting minutes" that will be transmitted to all parties within one week after conclusion of the meeting. A non-compliance meeting can be held as part of a weekly progress meeting.

1.5.4 Non-Compliance Resolution Meetings

A non-compliance resolution meeting will be held following any non-compliance meeting to formally document the agreed upon resolution formulated for the specific issue. The

non-compliance resolution meetings should be attended by the following responsible parties: Project Manager/Owner, CQA Manager, CQA Field Monitor and Contractor. If the problem requires a design modification, then the Design Engineer should also be present. The CQA Manager will document the issues discussed at the meeting by preparing “meeting minutes” that will be transmitted to all parties within one week after conclusion of the meeting. A non-compliance resolution meeting can be held as part of a weekly progress meeting.

2 SECTION II – SOIL AND ROCK CQA

This section of the CQA Plan addresses the soil components of the Class 2 Leachate Pond Liner Rehabilitation containment system and protocols to be implemented for soil materials selection, evaluation, laboratory and field testing and problem resolutions. The criteria to be used for determining acceptability of the constructed earthwork components are presented in the relevant sections of the Technical Specifications that apply to the Class 2 Leachate Pond Liner Rehabilitation Design.

2.1 SOIL AND ROCK COMPONENTS

The soil components of the leachate pond containment system consist of engineered low permeable earthfills, utility trench backfills, subgrade soil surface preparation, and placement of the leak detection layer sump rock. The soil components are discussed in the following.

2.1.1 Engineered Low Permeable Earthfill CQA

Engineered low permeable earthfill, also refers to engineered fill, compacted fill and general earthfill, includes any fills necessary to bring the containment system subgrade and surrounding areas to the design finished grades. The engineered general earthfill will be constructed of relatively homogeneous soils that are free of debris, foreign objects, rocks, and organics. The engineered general earthfill soil shall have a maximum particle size of 1 inch and a maximum permeability of 1×10^{-6} centimeters per second (cm/s) per ASTM D5084 test procedures.

All engineered low permeable earthfills shall be constructed in maximum 8-inch-thick, loose, lifts (layers), moisture conditioned and compacted to the lines and grades shown on the Construction Drawings. The compacted thickness for any lift shall not exceed 6 inches. All lifts shall be compacted to a minimum relative compaction of 90 percent of the maximum dry density with a moisture content of 2 to 6 percentage points greater than the optimum moisture content as determined by ASTM D1557 standardized laboratory test procedures. The CQA Field Monitor shall perform field density and moisture content tests consistent with the ASTM D6938 standard field test procedures at the frequency required in the Technical Specifications and presented in CQA Plan Table II-1.

2.1.2 Anchor Trench and Utility Trench Backfills CQA

Anchor trench and utility trench backfills will be constructed with engineered general earthfill consisting of relatively homogeneous soils that are free of debris, foreign objects, rocks, and organics. The anchor trench and utility trench backfill soil shall have a maximum particle size of 3 inches.

All anchor trench and utility trench backfill shall be constructed in maximum 8-inch-thick, loose, lifts (layers), moisture conditioned and compacted to the lines and grades shown on the Construction Drawings. The compacted thickness for any lift shall not exceed 6 inches. All lifts shall be compacted to a minimum relative compaction of 90 percent of the maximum dry density with a moisture content of ± 3 percentage points of the optimum

moisture content as determined by ASTM D1557 standardized laboratory test procedures. The CQA Field Monitor shall perform field density and moisture content tests consistent with the ASTM D6938 standard field test procedures at the frequency required in the Technical Specifications and presented in CQA Plan Table II-1.

2.1.3 Prepared Finished Subgrade Soil Surface CQA

The finished subgrade soil surface shall be prepared by excavation of native soils or placement of engineered general earthfill soil materials that conform to the requirements of CQA Plan Section 2.1.1 and meets the lines and grades requirements shown on the Construction Drawings N1 through N10. The CQA Field Monitor shall monitor preparation of the finished subgrade soil surface determine if it is relatively firm, non-yielding and smooth. Any non-conformance of the finished subgrade soil surface with the requirements of the Technical Specifications shall be reported to the Contractor and CQA Manager.

2.1.4 New Leak Detection Layer Sump Rock CQA

The new leak detection layer sump rock shall consist of washed crushed rock meeting the engineering material requirements presented in the Construction Specifications and meet the lines and grades requirements shown on the Construction Drawings N1 through N10. The CQA Field Monitor shall collect representative field samples for ASTM laboratory compliance testing at the frequencies required in the Technical Specifications and presented in CQA Plan Table II-1. The sump gravel shall have a minimum permeability of 1.0 cm/s per ASTM D2434 test procedures.

2.2 SOIL AND ROCK FIELD AND LABORATORY TESTING CQA

Soil and rock field and laboratory testing shall be performed to determine if the constructed engineered general earthfills, anchor trenches, and utility trench earthfills of the Class 2 Leachate Pond Liner Rehabilitation containment components meet or exceed the minimum requirements of the Technical Specifications. The CQA Field Monitor shall collect representative soil and rock samples, label and transport them to the CQA Soil Laboratory where testing will be performed consistent with the American Society for Testing and Materials (ASTM) standardized laboratory procedures and frequencies as listed in Class 2 Leachate Pond Liner Rehabilitation CQA Plan Table II-1. The CQA Monitor shall also perform field in-place soil moisture and density testing and compute the soil relative compaction consistent with the ASTM standardized field procedures and frequencies as listed in the Class 2 Leachate Pond Liner Rehabilitation CQA Plan Table II-1. The minimum placement and compaction testing requirements for engineered general earth fills and anchor and utility trench backfills are presented in Class 2 Leachate Pond Liner Rehabilitation CQA Plan Table II-2.

During construction, the testing frequencies may be increased if the following conditions are identified, among others:

- Adverse weather conditions.
- Breakdown of the Contractor's equipment

- Compacted materials fail to meet or exceed the minimum required specifications.
- The work area is significantly increased.

2.3 SOIL FIELD OBSERVATION CQA

The CQA Field Monitor shall document the construction of all soil containment components of the Class 2 Leachate Pond Liner Rehabilitation. The soil containment components include the engineered general earthfills, finished subgrade soil surface preparation and anchor and utility trench backfills.

The CQA Field Monitor shall make and record the following observations during placement, moisture conditioning and compacting engineered general earthfills and anchor and utility trench backfills:

- Particle size of soil.
- Loose lift (layer) thickness of soil being placed.
- Moisture condition of soil
- Compactor behavior during compaction (i.e., pad feet penetration depth, pumping, cracking, etc.).
- Number of compactor passes and coverages achieved for each placed soil lift.

The CQA Field Monitor shall make and record the following observations during preparation of the finished subgrade soil surface:

- Record the construction equipment used.
- Verifying that the finished subgrade soil surface is free of boulders and sharp rocks greater than 3 inches in greatest dimension.

2.4 DEFICIENCIES, NOTIFICATIONS AND RESOLUTIONS

When a Contractor's earthwork product is deemed deficient the CQA Field Monitor will immediately notify the Contract and the CQA Manager. The CQA Field Monitor, with the help of the CQA Manager as needed, will attempt to determine the limits and nature of the defect. The Contractor, CQA Manager and CQA Field Monitor will devise a solution to remedy the deficiency. If the deficiency requires a design modification, then the Design Engineer will be contacted for consultation and solution input and approval.

2.5 REPAIRS AND RETESTING

The Contractor will correct any identified deficiency to the satisfaction of the CQA Manager, CQA Field Monitor and/or Design Engineer. If a project specification criterion cannot be met, or unusual weather conditions hinder work, then the CQA Manager will develop and present to the Owner/Project Manager and Design Engineer suggested solutions for their approval.

All recommended retests of an identified deficiency must demonstrate to the satisfaction of the CQA Manager and Design Engineer that the defect has been corrected before any additional work can be performed in that area by the Contractor.

TABLE II-1
 Earthwork Material Evaluation Testing Frequencies

ASTM Test Designations ⁽¹⁾		Engineered General Earthfill (CY) ⁽²⁾	Anchor and Utility Trench Backfill (CY)	New Leak Detection Layer Sump Gravel (Source)
No.	Description			
D6913	Particle Size Distribution	5,000	50	1 ⁽⁴⁾
D1557	Modified Proctor Compaction Curve	5,000	50	
D2216	Moisture Content (convection oven)	5,000	50	
D2434	Constant Head Permeability			1 ⁽⁴⁾
D2487	Unified Soils Classification System	5,000	50	1 ⁽⁴⁾
D2488	Visual-Manual Soil Description	5,000	50	1 ⁽⁴⁾
D4318	Atterberg Plasticity Indices	5,000	50	
D4959	Moisture Content (direct heat)	5,000	50	
D5084	Falling Head Permeability	1 ⁽⁴⁾		
D6938	In-Place Field Moisture and Density (nuclear methods)	250	20 ⁽³⁾	
Notes:	(1) Minimum one test per material type. (2) CY = cubic yards (3) Minimum one test per 20 CY per 6-inch-thick compacted lift. (4) Minimum one test per material source.			

TABLE II-2
 Earthfill Placement And Compaction Requirements

Earthfill Type	Maximum Loose Lift Thickness (inches)	Moisture Content (%)	Minimum Relative Compaction (%)	ASTM Test Method No.
Engineered General Earthfill	8	± 3 percentage points of optimum	90	D1557
Anchor and Utility Trenches	8	± 3 percentage points of optimum	90	D1557
New Leak Detection Layer Sump Gravel	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3 SECTION III – HDPE GEOMEMBRANE CQA

This section of the CQA Plan addresses the geosynthetic components of the Class 2 Leachate Pond Liner Rehabilitation containment system and protocols to be implemented for geosynthetic materials selection, evaluation, laboratory and field testing and problem resolutions. The criteria to be used for determining the acceptability of the installed geosynthetic materials are presented in the relevant sections of the Technical Specifications that apply to the Class 2 Leachate Pond Liner Rehabilitation Design.

The geosynthetic components of the leachate pond containment system consist of a high-density polyethylene (HDPE) geomembrane with textured surfaces on both sides, a geocomposite drain net and a non-woven cushion geotextile. This section provides CQA protocols and procedures for manufacturing, delivery and storage and installation of the HDPE geomembrane.

3.1 GEOMEMBRANE MANUFACTURING

Prior to shipping the HDPE geomembrane to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Geosynthetic Materials Manufacturer's (Manufacturer) information that demonstrates that the polyethylene resin meets or exceeds the requirements specified in the relevant sections of the Technical Specifications:

- The Manufacturer's resin supplier's name, resin production plant address, and the brand name, lot numbers and production date of the resin.
- The resin supplier's quality control certificates issued for the resin lots used to produce the geomembrane.
- The Manufacturer's test result reports that verify the quality of the resin used to manufacture the geomembrane rolls that are delivered to the site.
- The Manufacturer's statement on the manufacturer's letterhead stationery that no reclaimed polymer was added to the resin lots used to Manufacturer the geomembrane delivered to the site.
- The Manufacturer's material properties sheet(s) including test results for the specified test methods or approved equivalents indicated in the relevant sections of the Technical Specifications.
- The Manufacturer's list of materials and quantities other than the base polymer which comprise the geomembrane.
- The Manufacturer's sampling procedure and test results.
- The Manufacturer's certification statement guaranteeing that the listed material properties are minimum values.

Prior to shipping the HDPE geomembrane to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Manufacturer's information that demonstrates that the HDPE geomembrane meets or

exceeds the requirements specified in the relevant sections of the Technical Specifications:

- Roll numbers, lot numbers and production date.
- Sampling procedures.
- Quality control test methods, test frequencies and test results.
- Quality control certificates signed by the Manufacturer's plant manager or approved representative.

3.2 DELIVERY AND STORAGE

Transportation of the geomembrane from the manufacturer's production plant facility to the Buena Vista Landfill site is the responsibility of the Manufacturer. All handling and storage on site are the responsibility of the Contractor and Geosynthetic Material Installer (Installer). Handling and storage of the geomembrane rolls is described in the following:

3.2.1 Handling

The CQA Field Monitor shall observe the Contractor's and Installer's procedures and methods to minimize damage during unloading the geomembrane rolls from the transport trucks and during all subsequent handling for storage and deployment of the geomembrane rolls.

Upon unloading and storage of the geomembrane rolls at the site, the CQA Field Monitor shall perform a surface inspection of the geomembrane rolls for defects and damage. This inspection will not involve unrolling the rolls unless defects or damages are identified and/or suspected. The CQA Field Monitor shall document rolls with identified defects and damages and report them to the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove and store separately any geomembrane rolls with defects and/or damage that are deemed non-usable by the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove from the site all defective and/or damaged geomembrane rolls at no cost to the Owner.

3.2.2 Storage

The Installer will be responsible for transporting and storage of the geomembrane rolls on site. The Project Manager/Owner shall provide storage space in a location(s). The CQA Field Monitor shall determine if the storage of the geomembrane rolls is adequate to protect them from potential being damaged.

3.3 CONFORMANCE SAMPLING AND TESTING CQA

Prior to shipping the HDPE geomembrane rolls to the site, the CQA Manager shall arrange for a representative to visit the manufacturer's production plant facility to collect representative samples of the geomembrane rolls that have been identified for shipment to the site. The CQA Manager's representative shall labeled and package the samples

and ship the sample by “Over Night Express” service to the designated CQA Geosynthetics Laboratory for conformance testing.

3.3.1 Sampling

Samples will be taken across the entire width of the roll and will not include the first 3 feet of the roll. Unless otherwise specified, samples will be 3-feet-long along the entire roll width. The CQA Manager’s representative will mark the machine production direction on the samples with an arrow. Unless otherwise specified, representative geomembrane samples shall be taken at a rate of one sample per lot or one sample per 100,000 square feet whichever generates the greater number of test samples.

3.3.2 Conformance Testing

The CQA Manager shall assign the following conformance tests to be performed by the CQA Geosynthetic Laboratory:

- ASTM D638, Tensile Strength
- ASTM D792 or ASTM D1505, Specific Gravity.
- ASTM D1603, Carbon Black Content.
- ASTM D5596, Carbon Black Dispersion.
- ASTM D5994 Thicknesses of Core and Textured Surfaces

3.3.3 Test Results

The CQA Manager shall review the conformance laboratory test results for compliance with the relevant sections of the Technical Specifications. The CQA Manager shall report any non-conformance test results (failing test results) to the Project Manager/Owner.

3.3.4 Failed Conformance Test Procedures

The following procedure shall be used when a geomembrane conformance test result fails to meet or exceed the requirements of the relevant section of the Technical Specifications:

- The Manufacturer shall replace any geomembrane roll that is not in compliance with the relevant section of the Technical Specifications with a roll that does meet or exceed requirements of the Technical Specifications.
- This additional conformance testing will be at the expense of the Geomembrane Manufacturer

3.4 GEOMEMBRANE PLACEMENT

The Installer shall place the HDPE geomembrane directly on either the prepared finished subgrade soil surface and/or on the previously placed new leak detection geocomposite layer that was placed directly on the existing Hypalon geomembrane that will remain in-place in compliance with the requirements of the relevant sections of the Technical Specifications. The CQA Field Monitor shall provide inspection services of the prepared

finished subgrade surface consistent with Section 2.1.3 Prepared Finished Subgrade Surface CQA of this CQA Plan. Prior to installing the geomembrane, the Installer shall provide to the CQA Manager a signed written statement on the Installer's company letterhead stating that the condition of the prepared finished subgrade surface is acceptable for placement of the HDPE geomembrane. The Installer will place and seam the geomembrane panels on the pond bottom, pond side slopes and into the perimeter anchor trench in compliance with the relevant sections of the Technical Specifications. The Contractor will then backfill the perimeter anchor trench with engineered earthfill soil in compliance with the relevant sections of the Technical Specifications. The CQA Field Monitor shall perform CQA services for backfill of the perimeter anchor trench in compliance with Section 2.1.2 Anchor and Utility Trench Backfills CQA of this CQA Plan.

This section of the CQA Plan describes the CQA procedures to be used to document geomembrane panel placement and seaming.

3.4.1 Geomembrane Panel Numbers And Placement

A geomembrane field panel generally has a rectangular shape with the following dimensions: the width by length of an entire geomembrane roll or the width by a partial length of a geomembrane roll or an irregular cut to fit portion of a geomembrane roll such as a pie shaped panel at a corner area. Prior to installing and seaming any geomembrane panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geomembrane panel layout for review and approval. The Installer and CQA Manager will agree upon a geomembrane panel identification numbering system for the approved panel layout.

The Installer will mark each panel as it is installed with the agreed upon identification panel layout number and manufacturer's geomembrane roll number that it was taken from. The Installer will prepare an "As-Built Panel Layout Drawing" to show the location and limits of each installed geomembrane panel and its identification numbers. The CQA Field Monitor will record the placement location and seaming information of each geomembrane panel which will include, but not be limited to the following: date and time placed, date and time seamed, adjacent panel number and manufacturer's roll number of each seam and name of the Installer's responsible personnel that completed the seam.

The CQA Field Monitor shall verify that geomembrane panels are installed at the approximate locations shown on the approved layout plan. Minor modifications of the geomembrane panel layout plan shall be allowed with the approval of the CQA Field Monitor, provided that no decrease in the performance of the liner is anticipated. Geomembrane panels will be placed one at a time, and each panel will be seamed immediately after its placement. The Installer will be fully responsible placement procedures.

3.4.2 Weather Condition Restrictions

Placement and seaming of geomembrane panels shall not occur when the ambient air temperature at a maximum vertical height of 6 inches above the panel surface is lower than 40°F (5°C) or greater than 104°F (40°C) unless otherwise authorized by the CQA

Field Monitor. Placement and seaming of geomembrane panels shall not occur during any precipitation event, in an area of ponded water, or when the prevalent wind velocity is greater than 25 miles per hour. The CQA Field Monitor will record daily the field weather conditions of temperature, precipitation, ponded water, and prevailing wind velocities.

3.4.3 Geomembrane Panel Placement CQA

The CQA Field Monitor shall perform and record the following activities:

- Observe the Installer's equipment and its use to prevent damage to the deployed geomembrane panels: including handling, traffic, excessive heat, and leakage of hydrocarbons, among others.
- Observe the prepared finished subgrade soil surface immediately prior to geomembrane panel deployment to determine if it is still in a suitable condition since being accepted by the Installer.
- Observe the prepared finished subgrade soil surface beneath deployed geomembrane panels to determine if it has deteriorated since being accepted by the Installer.
- Observe the Installer's personnel working on the deployed geomembrane panels to prevent smoking, wearing shoes with spikes or sharp edges, or engage in other activities which could damage the geomembrane.
- Observe the Installer's methods and equipment used to unroll and deploy geomembrane panels with the intent to minimize practices that cause scratches or crimps in the geomembrane and does not damage the supporting soil.
- Observe the Installer's methods and equipment used to place the geomembrane panels with the intent to minimize wrinkles.
- Observe the Installer's methods, equipment and materials used to temporarily ballast and/or anchor (e.g., sandbags, tires, etc.) the deployed geomembrane panels to minimize uplift by wind.
- Observe the Installer's personnel foot and vehicle traffic patterns with the intent to minimize potential damage to the deployed geomembrane wear excessive traffic is occurring by employing protective measures such as deploying geotextiles, extra geomembrane panels, or other suitable materials.
- Observe each panel after placement and prior to seaming for damage. The damaged areas shall be repaired to the satisfaction of the CQA Field Monitor and CQA Manager. If the damaged area is too severe, then the entire area or panel shall be removed and replaced.

3.5 FIELD SEAMING

Prior to installing and seaming any geomembrane panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geomembrane panel layout showing the proposed locations of panels and seams for review and approval. In general, seams should be oriented parallel to the direction of maximum slope (i.e., oriented along

not across the slope). Horizontal seam should be restricted to the bottom third of a slope (i.e., 1/3 of the total slope length measured from the toe of the slope) or restricted from areas of potential stress concentrations, unless otherwise authorized by the CQA Manager or Design Engineer. The Installer and CQA Manager shall agree upon a seam numbering system prior to the start of placing and seaming any geomembrane panels. The following presents CQA protocols and procedures to be implemented by the CQA Field Monitor:

3.5.1 Installer's Personnel Requirements

The Installer shall submit to the Project Manager/Owner and CQA Manager for review and approval a list of proposed seaming personnel with a summary of their experience. At least one seamer shall have experience seaming a minimum of 100,000 linear feet of polyethylene geomembrane using the same type of seaming equipment to be used at the site. This seamer shall be designated as the project "Master Seamer." The Master Seamer shall provide direct supervision over less experienced seamers. Seaming shall not take place unless the Master Seamer is present on-site.

3.5.2 Installer's Seaming Equipment

The CQA Field Monitor shall inspect the Installer's fusion and extrusion seaming equipment to verify and document that the proposed equipment (i.e., make and model) comply with the requirements of the relevant sections of the Technical Specifications. The Installer shall use a pyrometer to determine whether the seaming equipment is achieving the required minimum temperatures to seam the geomembrane.

3.5.3 Seam Preparation CQA

The CQA Field Monitor shall perform the following CQA activities during preparation of both extrusion seam and fusion seam welding of the geomembrane panels:

- Observe that prior to seam welding the Installer cleans the seam area of moisture, dust, dirt, debris, and any other foreign materials.
- Observe where seam overlap grinding is required, that the Installer performs grinding within 20 minutes of the seam welding.
- Observe where extrusion seam welding is performed that the abraded surface does not extend greater than approximately 0.25 inches from either side of the extrudate.
- Observe that both extrusion and fusion seam welds are aligned to minimize wrinkles and "fish-mouths."

3.5.4 Extrusion Seam Welding CQA

Prior to performing extrusion seam welding of geomembrane panels, the Contractor or Installer shall submit for review and approval by the Project Manager/Owner and CQA Manager the information that demonstrates that the polyethylene resin extrudate meets or exceeds the requirements specified in the relevant sections of the Technical Specifications. The CQA Field Monitor shall perform the following CQA activities during extrusion seam welding of the geomembrane panels:

- Observe and record during extrusion welding ambient air temperature at a maximum of 6 inches above the geomembrane panel surface, the temperatures of the extrudate and the temperature of the welder's nozzle.
- Observe that prior to starting a new seam weld the Installer purges all the heat-degraded extrude from the apparatus barrel.
- Observe that after completing an extrusion seam weld of a geomembrane panel the Installer places a smooth insulating plate or fabric between the extrusion welder's hot surfaces and the underlying geomembrane panel.

3.5.5 Fusion Seam Welding CQA

The CQA Field Monitor shall perform the following CQA activities during fusion seam welding of the geomembrane panels:

- Observe and record fusion seam welding apparatus temperature and speed and the ambient air temperatures at a maximum vertical height of 6 inches above the geomembrane panel surface.
- Observe that prior to fusion seam welding the Installer grinds the both the top and bottom edges of cross seam to a smooth incline.
- Observe that after completing a fusion seam weld of a geomembrane panel the Installer places a smooth insulating plate or fabric between the fusion seam welder's hot surfaces and the underlying geomembrane panel.

3.5.6 Trial Seam Welds CQA

The CQA Field Monitor shall observe the Installer's seamers perform both extrusion seam and fusion seam welds that are completed under similar field conditions as the production seam welds. Trial seam welds shall be performed at the beginning of each work period and at least once every five hours for each seam welder apparatus used during the work period. The trial seam weld dimensions shall be as follows:

- Fusion Seam Trial Weld Dimensions: 1-foot-wide by 15-feet-long.
- Extrusion Seam Trial Weld Dimensions: 1-foot-wide by 3-feet-long.

The CQA Field Monitor shall observe the Installer's seamers cut four (4) 1-inch-wide test specimens (coupons) from each trial seam weld. Two coupons will be tested in shear and two in peel using a field tensiometer. If any of the four coupons fails, then the entire operation shall be repeated. If any of the additional coupons fail, then the that seam welding apparatus and the Installer's seamer will not be allowed to be used for seaming until the deficiencies are corrected and two consecutive successful full trial seams are achieved.

The CQA Field Monitor shall record the following information for all successful and failure trial seam welding tests: trial test number, date, time, ambient air temperature measured a maximum of 6 inches above the geomembrane panel, number of extrusion or fusion seam welding apparatus, name of seamer and passing or failing test results.

3.6 NON-DESTRUCTIVE SEAM TESTING CQA

The Installer shall perform non-destructive tests over the full length of each extrusion seam weld and fusion seam weld in compliance with the methods and procedures specified in the relevant sections of the Technical Specifications. The purpose of non-destructive tests is to evaluate the continuity of seam, but it does not provide any information on seam strength. All extrusion seam welds shall be tested by the Installer by the vacuum box method and all fusion seam welds shall be tested by the Installer by the air pressure method.

The CQA Field Monitor will observe and record the following non-destructive testing activities:

- Observe all extrusion seam welds and fusion seam welds continuity testing.
- Record seam test locations, seam number, date, tester's name, and test results.
- Inform the Installer of any required repairs.
- Observe seam repairs and re-testing of the repaired seam.
- Mark on the geomembrane adjacent the repair that the repair has been completed and that the repair has been tested and the test results.
- Prepare a log of the non-destructive tests performed by the Installer and record the following information: test number, seam number, repair number (if applicable), date tested, tester's name and test results.

3.7 DESTRUCTIVE SEAM TESTING CQA

The Installer shall perform destructive tests at selected locations in compliance with the methods and procedures specified in the relevant sections of the Technical Specifications. The purpose of destructive tests is to evaluate the strength of the seam.

The CQA Field Monitor will observe and record the following destructive testing activities:

3.7.1 Seam Sampling

The CQA Field Monitor shall observe the Installer cut test samples out of the geomembrane panel seams for field and laboratory testing as described in the following:

- The CQA Monitor will select the destructive test sample locations.
- The CQA Monitor will collect destructive test samples at a minimum frequency of one test location per 500 linear feet of seam length. Additional destructive test locations may be sampled at the discretion of the CQA Field Monitor.
- Observe the Installer cut seam samples from selected geomembrane seams.
- Shall assign a destructive seam test number to each sample.
- Shall record the destructive seam sample location on the geomembrane panel layout drawing.

- Observe the Installer cut two seam samples (coupons) from two locations situated approximately 48 inches apart for field testing. Each coupon shall be 1-inch-wide by 12-inches-long with the seam oriented parallel and centered to its width. The Installer will then perform peel and shear strength tests with a field tensiometer. One coupon from each location will be tested for shear strength and one coupon from each location will be tested for peel strength consistent with the procedures specified in the relevant sections of the Technical Specifications. If all the field coupon tests have passing results, then test samples will be taken from between these field sample test locations for laboratory testing by the CQA Geosynthetics Laboratory.
- Observe the Installer cut one seam sample approximately 1-foot-wide by 42-inches-long with the seam oriented parallel to its length and centered to its width. The sample will be cut into three roughly equal pieces with dimensions of 12-inches-long by 12-inches wide with the seam oriented parallel and centered to its width. The Installer will then cut 10 coupon test specimens 1-inch-wide by 12-inches-long from each sample. One set of sample coupons will be given to the Installer for laboratory testing, one set of sample coupons will be given to the CQA Geosynthetic Laboratory for testing and one set of sample coupons will be given to the Project Manager/Owner for archiving.

3.7.2 Field Testing

The CQA Field Monitor will observe the Installer cut two seam samples (coupons) from two locations situated approximately 48 inches apart for field testing. Each coupon shall be 1-inch-wide by 12-inches-long with the seam oriented parallel and centered to its width. The Installer will then perform peel and shear strength tests with a field tensiometer. One coupon from each location will be tested for shear strength and one coupon from each location will be tested for peel strength consistent with the procedures specified in the relevant sections of the Technical Specifications.

The CQA Field Monitor will observe all field peel and shear tests and will record the following information for each test: sample location number, seam panel numbers, date and time of testing, peel and shear test results, tester's name and tensiometer brand, model, and serial number.

3.7.3 Laboratory Testing

The CQA Manager shall label, package, and ship the destructive sample to the CQA Geosynthetics Laboratory for testing. The CQA Geosynthetics Laboratory will test five (5) of the 10 samples for peel strength and five (5) of the 10 samples for shear strength consistent with ASTM D6392 standardized test method and shall provide the test results within 24 hours of receiving the samples. The peel strength test and shear strength test results shall meet or exceed the required minimum values specified in the relevant sections of the Technical Specifications.

3.7.4 Destructive Test Failure Procedures

The following procedures shall be performed whenever a destructive sample, tested by the CQA Geosynthetic Laboratory or the Installer's field tensiometer, fails meet or exceed the required minimum peel and shear strength values specified in the relevant sections

of the Technical Specifications. The Installer shall choose between the following two options.

- The Installer can remove the entire seam in question that is situated between two passing destructive seam test locations.
- The Installer cut new seam samples for destructive testing along the seam at a minimum distance of 10 feet in both directions from the failed destructive sample test location. The Installer will provide to the Project Manager/Owner and CQA Manager destructive test coupons as before for archiving and laboratory testing, respectively. If these destructive seam test samples have passing results, then the seam shall be reconstructed between these locations by capping. If either sample fails, then the process is repeated to establish the zone in which the seam should be reconstructed.

3.8 DEFECTS AND REPAIRS

The CQA Field Monitor shall inspect the installed geomembrane for defects or damage including holes, blisters, cuts, and heat melted areas, among others. The CQA Field Monitor will perform the following activities to evaluate and document repairs of any defects or damaged areas of the geomembrane liner:

3.8.1 Identification and Evaluation

The CQA Field Monitor shall observe the Installer perform non-destructive testing of all seam and non-seam areas that have been identified as being either defective or damaged. Each location that fails the nondestructive testing will be marked by the by the CQA Field Monitor and repaired by the Installer. Work will not proceed with any materials that will cover defective or damaged locations it has been repaired and the non-destructive tests show passing results.

3.8.2 Repair Methods

All repairs shall meet or exceed the minimum requirements specified by the relevant sections of the Technical Specifications. The CQA Field Monitor shall observe the Installer repair all the identified defective or damaged seams and non-seam areas of the installed geomembrane. Depending upon the type and severity of the defective or damaged portion of the liner the Installer may choose one or more of the following repair methods: removal and replace, capping, spot extrusion, among others. Prior to repairing the defective or damaged areas, the CQA Field Monitor shall approve the repair method proposed by the Installer.

3.9 ELECTRICAL LEAK LOCATION SURVEY CQA

An electrical leak location survey (ELLS) shall be performed to identify any holes or defects that penetrate through the installed HDPE geomembrane. NV5 anticipates that the ELLS will need to adhere to the procedures described in ASTM D7002-16, or most current version if one exists, entitled "Standard Practice for Leak Location on Exposed Geomembranes Using the Water Puddle System." NV5 anticipates that an electrical current energized set of conductive bare minimum 16 American Wire Gauge (AWG) or

heavier (lower AWG number) bare copper wires will need to be placed between the existing Hypalon geomembrane and the overlying new HDPE geomembrane, because the annular space between the geomembranes will be filled with air which is relatively non-conductive.

3.9.1 Bare Wire Grid Installation

The contractor shall install the bare wire to create a square shaped grid with maximum 10-foot center-to-center spacings in both directions as shown on Construction Drawing No. 3.1. One set of the grid sides shall be oriented parallel to the long-axis of the pond and the other set shall be oriented parallel to the short-axis of the pond. The wire shall be installed by unrolling from the spool and not by pulling off the end of the spool to minimize spirals, loops and kinks when installing.

3.9.2 Insulated Wire Terminations

The ends of the wires shall exit the anchor trench from between the two geomembrane layers without contacting the earth ground surface. This can be most effectively accomplished by connecting an insulated AWG 16 wire to the bare AWG 16 wire at the bottom of the anchor trench and then extending the insulated wire out of the trench leaving a minimum of approximately 20 feet of insulated wire neatly coiled and tied on the surface. The ELLS consultant will then connect both wires to a generator to energize the wire grid with electrical current during the ELLS.

3.9.3 ELLS Hole Repairs

The subconsultant that performs the ELLS shall prepare a report that describes the method and equipment used and the results of the completed ELLS. The ELLS subconsultant shall immediately clearly mark the hole location on the HDPE geomembrane surface. The ELLS subconsultant shall prepare a Site Plan figure with the approximate location of each identified hole and submit the figure to the CQA Monitor. The ELLS subconsultant shall retest all identified holes that are repaired by the geomembrane installer to ensure that the hole has been repaired to the satisfaction of the CQA Monitor.

4 SECTION IV – GEOCOMPOSITE DRAIN NET CQA

This section of the CQA Plan addresses the geosynthetic components of the Class 2 Leachate Pond Liner Rehabilitation containment system and protocols to be implemented for geosynthetic materials selection, evaluation, laboratory and field testing and problem resolutions. The criteria to be used for determining the acceptability of the installed geosynthetic materials are presented in the relevant sections of the Technical Specifications that apply to the Class 2 Leachate Pond Liner Rehabilitation Design.

The geosynthetic components of the leachate pond containment system consist of a high-density polyethylene (HDPE) geomembrane with textured surfaces on both sides, a geocomposite drain net and a non-woven cushion geotextile. This section provides CQA protocols and procedures for manufacturing, delivery and storage and installation of the geocomposite drain net.

4.1 GEOCOMPOSITE DRAIN NET MANUFACTURING

Prior to shipping the geocomposite drain net (geocomposite) to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Geosynthetic Materials Manufacturer's (Manufacturer) information that demonstrates that the polyethylene resin meets or exceeds the requirements specified in the relevant sections of the Technical Specifications:

- The Manufacturer's resin supplier's name, resin production plant address, and the brand name, lot numbers and production date of the resin.
- The resin supplier's quality control certificates issued for the resin lots used to produce the geomembrane.
- The Manufacturer's test result reports that verify the quality of the resin used to manufacture the geomembrane rolls that are delivered to the site.
- The Manufacturer's statement on the manufacturer's letterhead stationery that no reclaimed polymer was added to the resin lots used to Manufacturer the geomembrane delivered to the site.
- The Manufacturer's material properties sheet(s) including test results for the specified test methods or approved equivalents indicated in the relevant sections of the Technical Specifications.
- The Manufacturer's list of materials and quantities other than the base polymer which comprise the geomembrane.
- The Manufacturer's sampling procedure and test results.
- The Manufacturer's certification statement guaranteeing that the listed material properties are minimum values.

Prior to shipping the geocomposite to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Manufacturer's

information that demonstrates that the geocomposite meets or exceeds the requirements specified in the relevant sections of the Technical Specifications:

- Roll numbers, lot numbers and production date.
- Sampling procedures.
- Quality control test methods, test frequencies and test results.
- Quality control certificates signed by the Manufacturer's plant manager or approved representative.

4.2 DELIVERY AND STORAGE

Transportation of the geocomposite from the manufacturer's production plant facility to the Buena Vista Landfill site is the responsibility of the Manufacturer. All handling and storage on site are the responsibility of the Contractor and Geosynthetic Material Installer (Installer). Handling and storage of the geocomposite rolls is described in the following:

4.2.1 Handling

The CQA Field Monitor shall observe the Contractor's and Installer's procedures and methods to minimize damage during unloading the geocomposite rolls from the transport trucks and during all subsequent handling for storage and deployment of the geocomposite rolls.

Upon unloading and storage of the geocomposite rolls at the site, the CQA Field Monitor shall perform a surface inspection of the geocomposite rolls for defects and damage. This inspection will not involve unrolling the rolls unless defects or damages are identified and/or suspected. The CQA Field Monitor shall document rolls with identified defects and damages and report them to the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove and store separately any geocomposite rolls with defects and/or damage that are deemed non-usable by the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove from the site all defective and/or damaged geocomposite rolls at no cost to the Owner.

4.2.2 Storage

The Installer will be responsible for transporting and storage of the geocomposite rolls on site. The Project Manager/Owner shall provide storage space in a location(s). The CQA Field Monitor shall determine if the storage of the geocomposite rolls is adequate to protect them from potential being damaged.

4.3 CONFORMANCE SAMPLING AND TESTING CQA

Prior to shipping the geocomposite rolls to the site, the CQA Manager shall arrange for a representative to visit the manufacturer's production plant facility to collect representative samples of the geocomposite rolls that have been identified for shipment to the site. The CQA Manager's representative shall labeled and package the samples and ship the

sample by “Over Night Express” service to the designated CQA Geosynthetics Laboratory for conformance testing.

4.3.1 Sampling

Samples will be taken across the entire width of the roll and will not include the first 3 feet of the roll. Unless otherwise specified, samples will be 3-feet-long along the entire roll width. The CQA Manager’s representative will mark the machine production direction on the samples with an arrow. Unless otherwise specified, representative geocomposite samples shall be taken at a rate of one sample per lot or one sample per 100,000 square feet whichever generates the greater number of test samples.

4.3.2 Conformance Testing

The CQA Manager shall assign the following conformance tests to be performed by the CQA Geosynthetic Laboratory on the geonet component, geotextile component and the geocomposite combined components:

Geonet Component:

- ASTM D1603, Carbon Black Content.
- ASTM D5199, Nominal Thickness

Geotextile Component:

- ASTM D5261, Mass per Unit Area
- ASTM D4751, Apparent Opening Size
- ASTM D4491, Permittivity
- ASTM D4632, Grab Strength
- ASTM D4833, Puncture Strength

Geocomposite Combined Components:

- ASTM D4716, Transmissivity
- ASTM D7005, Peel Strength

4.3.3 Test Results

The CQA Manager shall review the conformance laboratory test results for compliance with the relevant sections of the Technical Specifications. The CQA Manager shall report any non-conformance test results (failing test results) to the Project Manager/Owner.

4.3.4 Failed Conformance Test Procedures

The following procedure shall be used when a geocomposite conformance test result fails to meet or exceed the requirements of the relevant section of the Technical Specifications:

- The Manufacturer shall replace any geocomposite roll that is not in compliance with the relevant section of the Technical Specifications with a roll that does meet or exceed requirements of the Technical Specifications.
- This additional conformance testing will be at the expense of the Geocomposite Manufacturer

4.4 GEOCOMPOSITE PLACEMENT

The Installer shall place the geocomposite on either the prepared finished subgrade surface and/or on the existing Hypalon geomembrane that will remain in-place in compliance with the requirements of the relevant sections of the Technical Specifications. The CQA Field Monitor shall provide inspection services of the prepared finished subgrade surface consistent with Section 2.1.3 Prepared Finished Subgrade Surface CQA of this CQA Plan. Prior to installing the geocomposite, the Installer shall provide to the CQA Manager a signed written statement on the Installer's company letterhead stating that the condition of the prepared finished subgrade surface is acceptable for placement of the geocomposite. The Installer will place and seam the geocomposite panels on the pond bottom, pond side slopes and into the perimeter anchor trench in compliance with the relevant sections of the Technical Specifications. The Contractor will then backfill the perimeter anchor trench with engineered earthfill soil in compliance with the relevant sections of the Technical Specifications. The CQA Field Monitor shall perform CQA services for backfill of the perimeter anchor trench in compliance with Section 2.1.2 Anchor and Utility Trench Backfills CQA of this CQA Plan.

This section of the CQA Plan describes the CQA procedures to be used to document geomembrane panel placement and seaming.

4.4.1 Geocomposite Panel Numbers And Placement

Prior to installing and seaming any geocomposite panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geocomposite panel layout for review and approval. The Installer and CQA Manager will agree upon a geocomposite panel identification numbering system for the approved panel layout.

The Installer will mark each panel as it is installed with the agreed upon identification panel layout number and manufacturer's geocomposite roll number that it was taken from. The Installer will prepare an "As-Built Panel Layout Drawing" to show the location and limits of each installed geocomposite panel and its identification numbers. The CQA Field Monitor will record the placement location and seaming information of each geocomposite panel which will include, but not be limited to the following: date and time placed, date and time seamed, adjacent panel number and manufacturer's roll number of each seam.

The CQA Field Monitor shall verify that geocomposite panels are installed at the approximate locations shown on the approved layout plan. Minor modifications of the geocomposite panel layout plan shall be allowed with the approval of the CQA Field Monitor, provided that no decrease in the performance of the liner is anticipated. Geocomposite panels will be placed one at a time, and each panel will be seamed immediately after its placement. The Installer will be fully responsible placement procedures.

4.4.2 Weather Condition Restrictions

Placement and seaming of geocomposite panels shall not occur when the ambient air temperature at a maximum vertical height of 6 inches above the panel surface is lower than 40°F (5°C) or greater than 104°F (40°C) unless otherwise authorized by the CQA Field Monitor. Placement and seaming of geocomposite panels shall not occur during any precipitation event, in an area of ponded water, or when the prevalent wind velocity is greater than 25 miles per hour. The CQA Field Monitor will record daily the field weather conditions of temperature, precipitation, ponded water, and prevailing wind velocities.

4.4.3 Geocomposite Panel Placement CQA

The CQA Field Monitor shall perform and record the following activities:

- Observe the Installer's equipment and its use to prevent damage to the deployed geocomposite panels: including handling, traffic, excessive heat, and leakage of hydrocarbons, among others.
- Observe the prepared finished subgrade surface immediately prior to geocomposite panel deployment to determine if it is still in a suitable condition since being accepted by the Installer.
- Observe the prepared finished subgrade surface beneath deployed geocomposite panels to determine if it has deteriorated since being accepted by the Installer.
- Observe the Installer's personnel working on the deployed geocomposite panels to prevent smoking, wearing shoes with spikes or sharp edges, or engage in other activities which could damage the geocomposite.
- Observe the Installer's methods and equipment used to unroll and deploy geocomposite panels with the intent to minimize practices that cause scratches or crimps in the geocomposite and does not damage the supporting subgrade surface.
- Observe the Installer's methods and equipment used to place the geocomposite panels with the intent to minimize wrinkles.
- Observe the Installer's methods, equipment and materials used to temporarily ballast and/or anchor (e.g., sandbags, tires, etc.) the deployed geocomposite panels to minimize uplift by wind.
- Observe the Installer's personnel foot and vehicle traffic patterns with the intent to minimize potential damage to the deployed geocomposite wear excessive traffic is

occurring by employing protective measures such as deploying geotextiles, extra geocomposite panels, or other suitable materials.

- Observe each panel after placement and prior to seaming for damage. The damaged areas shall be repaired to the satisfaction of the CQA Field Monitor and CQA Manager. If the damaged area is too severe, then the entire area or panel shall be removed and replaced.

4.5 FIELD SEAMING

Prior to installing and seaming any geocomposite panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geocomposite panel layout showing the proposed locations of panels and seams for review and approval. In general, seams should be oriented parallel to the direction of maximum slope (i.e., oriented along not across the slope). Horizontal seam should be restricted to the bottom third of a slope (i.e., 1/3 of the total slope length measured from the toe of the slope) or restricted from areas of potential stress concentrations, unless otherwise authorized by the CQA Manager or Design Engineer. The Installer and CQA Manager shall agree upon a seam numbering system prior to the start of placing and seaming any geocomposite panels. The following presents CQA protocols and procedures to be implemented by the CQA Field Monitor:

4.5.1 Installer's Personnel Requirements

The Installer shall submit to the Project Manager/Owner and CQA Manager for review and approval a list of proposed seaming personnel with a summary of their experience. At least one seamer shall have experience seaming a minimum of 100,000 linear feet of geocomposite using the same type of seaming equipment to be used at the site. This seamer shall be designated as the project "Master Seamer." The Master Seamer shall provide direct supervision over less experienced seamers. Seaming shall not take place unless the Master Seamer is present on-site.

4.6 DEFECTS AND REPAIRS

The CQA Field Monitor shall inspect the installed geocomposite for defects or damage including holes, blisters, and cuts, among others. The CQA Field Monitor will perform the following activities to evaluate and document repairs of any defects or damaged areas of the geocomposite liner:

4.6.1 Identification and Evaluation

The CQA Field Monitor shall observe the Installer means and methods during seaming of geocomposite panels. If defective geocomposite panels seams are identified, then the CQA Field Monitor will notify the Installer that the seam needs to be repaired or replaced.

4.6.2 Repair Methods

All repairs shall meet or exceed the minimum requirements specified by the relevant sections of the Technical Specifications. The CQA Field Monitor shall observe the Installer repair all the identified defective or damaged seams and non-seam areas of the

installed geocomposite. Depending upon the type and severity of the defective or damaged portion of the liner the Installer may choose one or more of the following repair methods: removal and/or replacement, among others. Prior to repairing the defective or damaged areas, the CQA Field Monitor shall approve the repair method proposed by the Installer.

5 SECTION V – NON-WOVEN CUSHION GEOTEXTILE CQA

This section of the CQA Plan addresses the geosynthetic components of the Class 2 Leachate Pond Liner Rehabilitation containment system and protocols to be implemented for geosynthetic materials selection, evaluation, laboratory and field testing and problem resolutions. The criteria to be used for determining the acceptability of the installed geosynthetic materials are presented in the relevant sections of the Technical Specifications that apply to the Class 2 Leachate Pond Liner Rehabilitation Design.

The geosynthetic components of the leachate pond containment system consist of a high-density polyethylene (HDPE) geomembrane with textured surfaces on both sides, a geocomposite drain net and a non-woven cushion geotextile. This section provides CQA protocols and procedures for manufacturing, delivery and storage and installation of the non-woven cushion geotextile.

5.1 GEOTEXTILE MANUFACTURING

Prior to shipping the non-woven, cushion geotextile (geotextile) to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Geosynthetic Materials Manufacturer's (Manufacturer) information that demonstrates that the geotextile materials exceed the requirements specified in the relevant sections of the Technical Specifications:

- The Manufacturer's resin supplier's name, resin production plant address, and the brand name, lot numbers and production date of the resin.
- The resin supplier's quality control certificates issued for the resin lots used to produce the geomembrane.
- The Manufacturer's test result reports that verify the quality of the resin used to manufacture the geomembrane rolls that are delivered to the site.
- The Manufacturer's statement on the manufacturer's letterhead stationery that no reclaimed polymer was added to the resin lots used to Manufacturer the geomembrane delivered to the site.
- The Manufacturer's material properties sheet(s) including test results for the specified test methods or approved equivalents indicated in the relevant sections of the Technical Specifications.
- The Manufacturer's list of materials and quantities other than the base polymer which comprise the geomembrane.
- The Manufacturer's sampling procedure and test results.
- The Manufacturer's certification statement guaranteeing that the listed material properties are minimum values.

Prior to shipping the geotextile to the site, the Contractor shall submit for review and approval by the Project Manager/Owner and CQA Manager the following Manufacturer's

information that demonstrates that the geotextile meets or exceeds the requirements specified in the relevant sections of the Technical Specifications:

- Roll numbers, lot numbers and production date.
- Sampling procedures.
- Quality control test methods, test frequencies and test results.
- Quality control certificates signed by the Manufacturer's plant manager or approved representative.

5.2 DELIVERY AND STORAGE

Transportation of the geotextile from the manufacturer's production plant facility to the Buena Vista Landfill site is the responsibility of the Manufacturer. All handling and storage on site are the responsibility of the Contractor and Geosynthetic Material Installer (Installer). Handling and storage of the geotextile rolls is described in the following:

5.2.1 Handling

The CQA Field Monitor shall observe the Contractor's and Installer's procedures and methods to minimize damage during unloading the geotextile rolls from the transport trucks and during all subsequent handling for storage and deployment of the geotextile rolls.

Upon unloading and storage of the geotextile rolls at the site, the CQA Field Monitor shall perform a surface inspection of the geotextile rolls for defects and damage. This inspection will not involve unrolling the rolls unless defects or damages are identified and/or suspected. The CQA Field Monitor shall document rolls with identified defects and damages and report them to the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove and store separately any geotextile rolls with defects and/or damage that are deemed non-usable by the Project Manager/Owner and CQA Manager. The CQA Manager shall notify the Contractor to remove from the site all defective and/or damaged geotextile rolls at no cost to the Owner.

5.2.2 Storage

The Installer will be responsible for transporting and storage of the geotextile rolls on site. The Project Manager/Owner shall provide storage space in a location(s). The CQA Field Monitor shall determine if the storage of the geotextile rolls is adequate to protect them from potential being damaged.

5.3 CONFORMANCE SAMPLING AND TESTING CQA

Prior to shipping the geocomposite rolls to the site, the CQA Manager shall arrange for a representative to visit the manufacturer's production plant facility to collect representative samples of the geotextile rolls that have been identified for shipment to the site. The CQA Manager's representative shall labeled and package the samples and ship the sample by

“Over Night Express” service to the designated CQA Geosynthetics Laboratory for conformance testing.

5.3.1 Sampling

Samples will be taken across the entire width of the roll and will not include the first 3 feet of the roll. Unless otherwise specified, samples will be 3-feet-long along the entire roll width. The CQA Manager’s representative will mark the machine production direction on the samples with an arrow. Unless otherwise specified, representative geocomposite samples shall be taken at a rate of one sample per lot or one sample per 100,000 square feet whichever generates the greater number of test samples.

5.3.2 Conformance Testing

The CQA Manager shall assign the following conformance tests to be performed by the CQA Geosynthetic Laboratory on the geotextile:

- ASTM D5261, Mass per Unit Area
- ASTM D4751, Apparent Opening Size
- ASTM D4491, Permittivity
- ASTM D4632, Grab Strength
- ASTM D4833, Puncture Strength

5.3.3 Test Results

The CQA Manager shall review the conformance laboratory test results for compliance with the relevant sections of the Technical Specifications. The CQA Manager shall report any non-conformance test results (failing test results) to the Project Manager/Owner.

5.3.4 Failed Conformance Test Procedures

The following procedure shall be used when a geotextile conformance test result fails to meet or exceed the requirements of the relevant section of the Technical Specifications:

- The Manufacturer shall replace any geotextile roll that is not in compliance with the relevant section of the Technical Specifications with a roll that does meet or exceed requirements of the Technical Specifications.
- This additional conformance testing will be at the expense of the Geotextile Manufacturer

5.4 GEOTEXTILE PLACEMENT

The Installer shall place the geotextile on either the prepared finished subgrade surface and/or on the existing Hypalon geomembrane that will remain in-place in compliance with the requirements of the relevant sections of the Technical Specifications. The CQA Field

Monitor shall provide inspection services of the prepared finished subgrade surface consistent with Section 2.1.3 Prepared Finished Subgrade Surface CQA of this CQA Plan. Prior to installing the geotextile, the Installer shall provide to the CQA Manager a signed written statement on the Installer's company letterhead stating that the condition of the prepared finished subgrade surface is acceptable for placement of the geotextile. The Installer will place and seam the geotextile panels on the pond bottom, pond side slopes and into the perimeter anchor trench in compliance with the relevant sections of the Technical Specifications. The Contractor will then backfill the perimeter anchor trench with engineered earthfill soil in compliance with the relevant sections of the Technical Specifications. The CQA Field Monitor shall perform CQA services for backfill of the perimeter anchor trench in compliance with Section 2.1.2 Anchor and Utility Trench Backfills CQA of this CQA Plan.

This section of the CQA Plan describes the CQA procedures to be used to document geomembrane panel placement and seaming.

5.4.1 Geotextile Panel Numbers And Placement

Prior to installing and seaming any geotextile panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geotextile panel layout for review and approval. The Installer and CQA Manager will agree upon a geotextile panel identification numbering system for the approved panel layout.

The Installer will mark each panel as it is installed with the agreed upon identification panel layout number and manufacturer's geotextile roll number that it was taken from. The Installer will prepare an "As-Built Panel Layout Drawing" to show the location and limits of each installed geotextile panel and its identification numbers. The CQA Field Monitor will record the placement location and seaming information of each geotextile panel which will include, but not be limited to the following: date and time placed, date and time seamed, adjacent panel number and manufacturer's roll number of each seam.

The CQA Field Monitor shall verify that geotextile panels are installed at the approximate locations shown on the approved layout plan. Minor modifications of the geotextile panel layout plan shall be allowed with the approval of the CQA Field Monitor, provided that no decrease in the performance of the liner is anticipated. Geotextile panels will be placed one at a time, and each panel will be seamed immediately after its placement. The Installer will be fully responsible placement procedures.

5.4.2 Weather Condition Restrictions

Placement and seaming of geotextile panels shall not occur when the ambient air temperature at a maximum vertical height of 6 inches above the panel surface is lower than 40°F (5°C) or greater than 104°F (40°C) unless otherwise authorized by the CQA Field Monitor. Placement and seaming of geotextile panels shall not occur during any precipitation event, in an area of ponded water, or when the prevalent wind velocity is greater than 25 miles per hour. The CQA Field Monitor will record daily the field weather conditions of temperature, precipitation, ponded water, and prevailing wind velocities.

5.4.3 Geotextile Panel Placement CQA

The CQA Field Monitor shall perform and record the following activities:

- Observe the Installer's equipment and its use to prevent damage to the deployed geotextile panels: including handling, traffic, excessive heat, and leakage of hydrocarbons, among others.
- Observe the prepared finished subgrade surface immediately prior to geotextile panel deployment to determine if it is still in a suitable condition since being accepted by the Installer.
- Observe the prepared finished subgrade surface beneath deployed geotextile panels to determine if it has deteriorated since being accepted by the Installer.
- Observe the Installer's personnel working on the deployed geotextile panels to prevent smoking, wearing shoes with spikes or sharp edges, or engage in other activities which could damage the geotextile.
- Observe the Installer's methods and equipment used to unroll and deploy geotextile panels with the intent to minimize practices that cause scratches or crimps in the geotextile and does not damage the supporting subgrade surface.
- Observe the Installer's methods and equipment used to place the geotextile panels with the intent to minimize wrinkles.
- Observe the Installer's methods, equipment and materials used to temporarily ballast and/or anchor (e.g., sandbags, tires, etc. the deployed geotextile panels to minimize uplift by wind.
- Observe the Installer's personnel foot and vehicle traffic patterns with the intent to minimize potential damage to the deployed geotextile wear excessive traffic is occurring by employing protective measures such as deploying geotextiles, extra geotextile panels, or other suitable materials.
- Observe each panel after placement and prior to seaming for damage. The damaged areas shall be repaired to the satisfaction of the CQA Field Monitor and CQA Manager. If the damaged area is too severe, then the entire area or panel shall be removed and replaced.

5.5 FIELD SEAMING

Prior to installing and seaming any geotextile panels, the Installer shall submit to the Project Manager/Owner and CQA Manager a proposed geotextile panel layout showing the proposed locations of panels and seams for review and approval. In general, seams should be oriented parallel to the direction of maximum slope (i.e., oriented along not across the slope). Horizontal seam should be restricted to the bottom third of a slope (i.e., 1/3 of the total slope length measured from the toe of the slope) or restricted from areas of potential stress concentrations, unless otherwise authorized by the CQA Manager or Design Engineer. The Installer and CQA Manager shall agree upon a seam numbering

system prior to the start of placing and seaming any geotextile panels. The following presents CQA protocols and procedures to be implemented by the CQA Field Monitor:

5.5.1 Installer's Personnel Requirements

The Installer shall submit to the Project Manager/Owner and CQA Manager for review and approval a list of proposed seaming personnel with a summary of their experience. At least one seamer shall have experience seaming a minimum of 100,000 linear feet of geotextile using the same type of seaming equipment to be used at the site. This seamer shall be designated as the project "Master Seamer." The Master Seamer shall provide direct supervision over less experienced seamers. Seaming shall not take place unless the Master Seamer is present on-site.

5.6 DEFECTS AND REPAIRS

The CQA Field Monitor shall inspect the installed geotextile for defects or damage including holes, blisters, and cuts, among others. The CQA Field Monitor will perform the following activities to evaluate and document repairs of any defects or damaged areas of the geotextile liner:

5.6.1 Identification and Evaluation

The CQA Field Monitor shall observe the Installer means and methods during seaming of geotextile panels. If defective geotextile panels seams are identified, then the CQA Field Monitor will notify the Installer that the seam needs to be repaired or replaced.

5.6.2 Repair Methods

All repairs shall meet or exceed the minimum requirements specified by the relevant sections of the Technical Specifications. The CQA Field Monitor shall observe the Installer repair all the identified defective or damaged seams and non-seam areas of the installed geotextile. Depending upon the type and severity of the defective or damaged portion of the liner the Installer may choose one or more of the following repair methods: removal and/or replacement, among others. Prior to repairing the defective or damaged areas, the CQA Field Monitor shall approve the repair method proposed by the Installer.

6 SECTION VI - PIPES AND FITTINGS CQA

This section of the CQA Plan addresses the pipes and fittings that will need to be removed and replaced or modified. The pipes and fittings are comprised of both high-density polyethylene (HDPE) and polyvinylchloride (PVC) materials.

6.1 PIPES

The CQA Field Monitor shall observe the removal and replacement of all surface pipes presently discharging into the Class 2 Leachate Pond and the extension of these pipes.

- 2-inch-diameter PVC leachate discharge pipe at north central end of the pond: shall be partially uncovered and removed for earthwork and geomembrane installation and then replaced and modified by extending it approximately 10 feet.
- 3-inch-diameter HDPE leachate discharge pipe at northeast end of pond: shall be partially uncovered and removed for earthwork and geomembrane installation and then replaced and modified by extending it approximately 10 feet.
- 1-inch-diameter PVC leachate detection sump discharge pipe at southeast end of pond: shall be removed for earthwork and geomembrane installation and then replaced and modified by extending it approximately 10 feet.
- 2-inch-diameter HDPE leachate discharge pipe at southwest end of pond: shall be partially uncovered and removed for earthwork and geomembrane installation and then replaced and modified by extending it approximately 10 feet.
- 4-inch-diameter HDPE landfill gas condensate discharge pipe at southeast end of pond: shall be removed for earthwork and geomembrane installation and then replaced and modified by extending it approximately 10 feet.
- 6-inch-diameter HDPE spray evaporation header pipe and 2-inch-diameter lateral spray pipes assembly shall be removed for earthwork and geomembrane liner installation and then replaced on a concrete anchor foundation. The lateral spray pipes shall be extended approximately 3 feet.

6.1.1 Pipe Extensions Joints and Fittings

The CQA Field Monitor shall observe the Installer extend each pipe as described in the relevant section of the Technical Specifications. Each pipe shall be extended with similar pipe materials. The extension joints and/or fittings shall be attached as described below.

- HDPE pipe extensions shall be joined by a **butt-fusion** weld using only manufacturer approved methods and equipment.
- PVC pipe extensions shall be joined by glued, slip-slip, PVC couplings.

7 SECTION VII - DOCUMENTATION CQA

The CQA Manager will document that all construction quality assurance requirements have been addressed and satisfied. The CQA Manager will provide the Project Manager/Owner with data sheets, record logs, daily field reports, photographs, and meeting minutes to verify that all monitoring activities have been carried out. The CQA Field Monitor will maintain at the job site a complete file of plans and specifications, CQA plan, checklists, test procedures, daily logs, and other pertinent documents.

7.1 CONTRACTOR'S REQUEST FOR INFORMATION

The CQA Manager shall review and respond to all requests for information (RFI) submitted by the Contractor. If necessary, the Project Manager and/or Design Engineer shall respond to the RFI. The CQA Manager will assign a number to each RFI as they are submitted.

7.2 CQA FORMS

The Design Engineer shall review and approve all CQA forms proposed for use by the CQA Manager and CQA Field Monitor. It is the Design Engineer's prerogative to modify any CQA form, as well as require additional CQA forms to assure that the CQA documentation of this construction project is complete and meets or exceeds the requirements of the relevant sections of the Technical Specifications and contractual documents.

7.3 OBSERVATION LOGS AND TESTING DATA SHEETS

The CQA Field Monitor will prepare and maintain daily observation logs and testing data sheets. At a minimum, these logs and data sheets will include the following information:

- Date, project name, project number, location, and subject.
- Weather conditions.
- Site Plan showing all work areas and field test locations.
- Descriptions and locations of ongoing construction.
- Equipment and personnel used daily by the Contractor and subcontractors.
- Descriptions of work being tested and/or observed and documented.
- Locations where tests test samples were collected.
- Summary table showing laboratory and field test results.
- Materials received log including quality verification documentation.

7.4 PHOTOGRAPH LOG

The CQA Field Monitor will take photographs to document the Contractor's daily construction activities, progress, and status of work products. These photographs will serve as a pictorial record of work progress, problems, and mitigation activities.

7.5 DESIGN AND/OR SPECIFICATION CHANGES

The CQA Field Monitor shall keep a record of all design and/or specification changes made and approved by the Project Manager/Owner and Design Engineer during construction project.

7.6 DAILY FIELD REPORTS

The CQA Field Monitor shall prepare daily field reports to describe the Contractor's work activities, progress, problems, and resolutions among other issues. The daily field reports may include but not be limited to the following information:

- Date, project name, project number, daily field report number.
- Contractor's work activities and progress.
- Summary of field test results and areas with failing tests that need reworking and retesting, and the retest results.
- Summary of construction deficiencies and/or defects that need correcting or repaired.
- Discussions with the Contractor and/or subcontractors regarding problems and their resolutions.
- Summary discussions of the Contractor's anticipated short- and long-term construction schedules.

7.7 FINAL CQA REPORT

When the construction work is completed, the CQA Manager will prepare a final CQA report that will be signed and stamped by the responsible California registered Professional Engineer or Certified Engineering Geologist. This report will certify that the completed construction work was performed in compliance with the Construction Plans and Specifications. The report will also include field and laboratory information and a set of As-Built Drawings to document the completed construction work.

*** END OF DOCUMENT ***