

AGREEMENT NO. ____-____

THIS AGREEMENT, (“Agreement”) made and entered into on this 3rd day of April, 2018, between the COUNTY OF YOLO, a political subdivision of the State of California (“COUNTY”), and COMANCO Environmental Corporation (“CONTRACTOR”), a Florida corporation.

ARTICLE I. In consideration of the payments and agreements hereinafter mentioned, to be made and performed by the COUNTY, CONTRACTOR shall, at his or her own cost and expense, do all the work and furnish all the materials, except such as are mentioned in the Project Plans and Specifications referenced below, to be furnished by the COUNTY, necessary to construct and complete in a good, workmanlike and substantial manner and to the satisfaction of the COUNTY Director of Department of Community Services (“Director”), the work described in the Project Plans and Specifications described below, including any addenda thereto, and also in accordance with the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished, and the General Prevailing Wage Rates, which said Project Plans and Specifications, Labor Surcharge and Equipment Rental Rates, and General Prevailing Wage Rates are hereby specially referred to and by such reference made a part hereof.

The Project Plans and Specifications for the work to be done are dated January 19, 2018 and are entitled:

**PLANS AND SPECIFICATIONS FOR THE
GEOSYNTHETIC INSTALLATION
at the
YOLO COUNTY CENTRAL LANDFILL**

These Project Plans and Specifications (“Specification”) are attached hereto as Exhibit B and hereby made a part of this Agreement.

ARTICLE II. The CONTRACTOR shall provide the materials and do the work according to the terms and conditions herein contained and referred to, for the prices hereinafter set forth, and COUNTY hereby contracts to pay the same at the time, in the manner and upon the conditions herein set forth; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained.

ARTICLE III. The statement of prevailing wages appearing in the General Prevailing Wage Rates is hereby specifically referred to and by this reference is made a part of this contract. It is further expressly agreed by and between the parties hereto that should there be any conflict between the terms of this instrument and the bid or proposal of said CONTRACTOR, then this instrument shall control and nothing herein shall be considered as an acceptance of the said terms of said proposal conflicting herewith.

ARTICLE IV. By its signature hereunder, CONTRACTOR certifies that it is aware of the

provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self insurance in accordance with the provisions of that code, and CONTRACTOR will comply with such provisions before commencing the performance of the work of this contract.

ARTICLE V. CONTRACTOR shall indemnify, defend and hold harmless the County, its elected representatives, officers, agents, and employees from and against any and all claims, demands, losses, defense costs, expenses (including attorneys' fees) or liability of any kind or nature, for personal injury or other damages arising out of or, as a result of litigation or administrative proceeding(s), alleged to arise out of:

(1) any negligent or willful act, error or omission of CONTRACTOR, its officers, agents or employees, in performing the services, responsibilities or duties required of CONTRACTOR by this Agreement; or (2) any breach of any statutory, regulatory, contractual or legal duty of any kind related, directly or indirectly, to the services, responsibilities or duties required of CONTRACTOR by this Agreement.

In providing any defense under this Article, CONTRACTOR shall use counsel reasonably acceptable to the County Counsel. The provisions of this Paragraph shall survive the termination or expiration of this Agreement.

ARTICLE VI.

A. All notices shall be deemed to have been given when made in writing and delivered or mailed to the respective representatives of the COUNTY and CONTRACTOR at their respective addresses as follows:

CONTRACTOR: COMANCO Environmental Corporation
4301 Sterling Commerce Dr.
Plant City, FL 33566
Attn: Mark A. Topp, President

COUNTY: Department of Community Services
Division of Integrate Waste Management
44090 County Road 28H
Woodland, CA 95776
Attn: Ramin Yazdani, Interim Director

B. In lieu of written notice to the above addresses, any party may provide notices through the use of facsimile machines provided confirmation of delivery is obtained at the time of transmission of the notices and provided the following facsimile telephone numbers are used:

To CONTRACTOR: (813) 988 – 8953

To COUNTY: (530) 666 – 8853

C. Any party may change the address or facsimile number to which such

communications are to be given by providing the other parties with written notice of such change at least fifteen (15) calendar days prior to the effective date of change.

D. All notices shall be effective upon receipt and shall be deemed received through delivery if personally served using facsimile machines, or on the fifth (5th) day following deposit in the mail if sent by first class mail.

ARTICLE VII. CONTRACTOR agrees to receive and accept the following prices as full compensation for furnishing all materials and for doing all the work contemplated and embraced in this Agreement; also for all loss or damage, arising out of the nature of the work aforesaid, or from the action of the elements or, as consistent with the Project Plans and Specifications and all other applicable laws from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the COUNTY Director, and for all risks of every description connected with the work; also for all expenses incurred by or in consequence of the suspension or discontinuance of work and for well and faithfully completing the work, and the whole thereof, in the manner and according to the Project Plans and Specifications, and the requirements of the Engineer under them, to wit:

CONTRACT PRICE SCHEDULE

Item No.	Description	Section Reference⁽¹⁾	Estimate Quantity	Unit	Unit Price	Total Cost
1	Leak Detection Sump	12	7	EACH	\$4,000.00	\$28,000.00
2	60-mil Double-Textured HDPE Geomembrane	9	265,956	SF	\$0.36	\$95,744.16
3	Drainage Geocomposite	7	255,334	SF	\$0.18	\$45,960.12
Total Bid						\$169,704.28

Notes:

(1) The Section Reference provides the Section number within the technical Provisions or Contract Document where the measurement and payment of the bid item is described.

ARTICLE VIII. CONTRACTOR expressly acknowledges that CONTRACTOR is fully cognizant of, fully understands, and unreservedly agrees that, all provisions of the Project Plans and Specifications are absolutely controlling and equally applicable.

ARTICLE IX. CONTRACTOR shall maintain, at its sole cost an expense, the insurance described in Exhibit A throughout the entire term of this Agreement.

ARTICLE X.

(A) It is understood and agreed by all the parties hereto that CONTRACTOR is an independent CONTRACTOR and that no relationship of employer-employee exists between the COUNTY and CONTRACTOR. Neither CONTRACTOR nor CONTRACTOR's assigned personnel shall be entitled to any benefits payable to employees of the COUNTY. CONTRACTOR hereby indemnifies and holds the COUNTY harmless from any and all claims that may be made against the COUNTY based upon any contention by any third party that an employer-employee relationship exists by reason of this Agreement.

(B) It is further understood and agreed by all parties hereto that neither CONTRACTOR nor CONTRACTOR's assigned personnel shall have any right to act on behalf of the COUNTY in any capacity whatsoever as an agent or to bind the COUNTY to any obligation whatsoever.

(C) It is further understood and agreed by all parties hereto that CONTRACTOR must issue any and all forms required by Federal and State laws for income and employment tax purposes, including W-2 and 941 forms, for all of CONTRACTOR's assigned personnel.

ARTICLE XI. In the performance of the services required by this Agreement, CONTRACTOR shall comply with all applicable Federal, State, and County statutes, ordinances, regulations, directives and laws. This Agreement shall be deemed to be executed within the State of California and construed in accordance with and governed by the laws of the State of California. Any action or proceeding arising out of this Agreement shall be filed in a California State court located in Woodland, California.

ARTICLE XII. The waiver by COUNTY or any of its officers, agents or employees or the failure of the COUNTY or its officers, agents or employees to take action with respect to any right conferred by, or any breach of any obligation or responsibility of this Agreement shall not be deemed to be a waiver of such obligation or responsibility, or subsequent breach of same, or of any terms, covenants or conditions of this Agreement.

ARTICLE XIII. This Agreement constitutes the entire agreement between the COUNTY and CONTRACTOR and supersedes all prior negotiations, representations, or agreements, whether written or oral. In the event of a dispute between the parties as to the language of this Agreement or the construction or meaning of any term hereof, this Agreement shall be deemed to have been drafted by the parties in equal parts so that no presumptions or inferences concerning its terms or interpretation may be construed against any party to this Agreement.

ARTICLE XIV. This Agreement may be amended only by written instrument signed by the COUNTY and CONTRACTOR.

IN WITNESS WHEREOF, the parties to this Agreement have hereunto set their hands the year and date first above written.

COUNTY:
COUNTY OF YOLO

CONTRACTOR:
COMANCO Environmental Corporation

By: _____

Oscar Villegas, Chair
Board of Supervisors

By:  _____

Mark A. Topp
President

Attest:
Julie Dachtler, Deputy Clerk of the
Board of Supervisors

Licensed in accordance with an act
providing for the registration
of Contractors, License No. 814631

By: _____
Julie Dachtler, Deputy
(SEAL)

Approved as to Form:
Philip Pogledich, County Counsel

By:  _____
Eric May, Senior Deputy

EXHIBIT A

INSURANCE REQUIREMENTS

(a) During the term of this Agreement, CONTRACTOR shall at all times maintain, at its expense, the following coverages and requirements. The comprehensive general liability insurance shall include broad form property damage insurance.

Comprehensive General Liability – \$1,000,000/occurrence and \$2,000,000/aggregate.

Automobile Liability – \$1,000,000/occurrence (general) and \$500,000/occurrence (property) (include coverage for Hired and Non-owned vehicles).

Professional Liability/Malpractice/Errors and Omissions – \$1,000,000/occurrence and \$2,000,000/aggregate.

Workers' Compensation – Statutory Limits/Employers' Liability -- \$1,000,000/accident for bodily injury or disease.

(b) The County, its officers, agents, employees and volunteers shall be named as additional insured on all but the workers' compensation and professional liability coverages. (Evidence of additional insured may be needed as a separate endorsement due to wording on the certificate negating any additional writing in the description box.)

(c) Said policies shall remain in force through the life of this Agreement and, with the exception of professional liability coverage, shall be payable on a "per occurrence" basis unless the County Risk Manager specifically consents in writing to a "claims made" basis. For all "claims made" coverage, in the event that CONTRACTOR changes insurance carriers CONTRACTOR shall purchase "tail" coverage covering the term of this Agreement and not less than three years thereafter. Proof of such "tail" coverage shall be required at any time that CONTRACTOR changes to a new carrier prior to receipt of any payments due.

(d) CONTRACTOR shall declare all aggregate limits on the coverage before commencing performance of this Agreement, and the County's Risk Manager reserves the right to require higher aggregate limits to ensure that the coverage limits required for this Agreement as set forth above are available throughout the performance of this Agreement.

(e) Any deductibles or self-insured retentions must be declared to and are subject to the approval of the County Risk Manager.

(f) Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the Director (ten (10) days for delinquent insurance premium payments).

(g) Insurance is to be placed with insurers with a current A.M. Best's rating of no less

than A:VII, unless otherwise approved by the County Risk Manager.

(h) The policies shall cover all activities of CONTRACTOR, its officers, employees, agents and volunteers arising out of or in connection with this Agreement.

(i) For any claims relating to this Agreement, CONTRACTOR's insurance coverage shall be primary, including as respects the County, its officers, agents, employees and volunteers. Any insurance maintained by the County shall apply in excess of, and not contribute with, insurance provided by CONTRACTOR's liability insurance policy.

(j) CONTRACTOR shall waive all rights of subrogation against the County, its officers, employees, agents and volunteers.

(k) Prior to commencing services pursuant to this Agreement, CONTRACTOR shall furnish the Director with original endorsements reflecting coverage required by this Agreement. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements are to be received by, and are subject to the approval of, the County Risk Manager before work commences. Upon County's request, CONTRACTOR shall provide complete, certified copies of all required insurance policies, including endorsements reflecting the coverage required by these specifications.

(l) During the term of this Agreement, CONTRACTOR shall furnish the Director with original endorsements reflecting renewals, changes in insurance companies and any other documents reflecting the maintenance of the required coverage throughout the entire term of this Agreement. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. Upon County's request, CONTRACTOR shall provide complete, certified copies of all required insurance policies, including endorsements reflecting the coverage required by these specifications.

Exhibit B

PLANS AND SPECIFICATIONS

FOR

GEOSYNTHETIC INSTALLATION

at the

**YOLO COUNTY CENTRAL LANDFILL
YOLO COUNTY, CALIFORNIA**

**County of Yolo
Division of Integrated Waste Management
Yolo County Central Landfill Conference Room
44090 County Road 28H
Woodland, CA 95776**

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PART 1– GENERAL PROVISIONS OF THE CONSTRUCTION CONTRACT

SECTION 1 - DEFINITIONS AND TERMS

1-1 GENERAL

Whenever the following terms, titles, or abbreviations are used in these Specifications, or in any document or instrument where these specifications govern, the intent and meaning shall be as herein defined.

Working titles have a masculine gender, such as "workman" and "journeyman" and the pronoun "he," are utilized in the Specifications for the sake of brevity, and are intended to refer to persons of either sex.

1-2 ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
APA	American Plywood Association
APWA	American Public Works Association
ASA	American Standards Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
AWS	American Welding Society
AWWA	American Water Works Association
CSI	Construction Specifications Institute
FS	Federal Specifications
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety & Health Act
Title 19	Title 19 (Public Safety) of the California Administrative Code
Title 24	Title 24 (Building Standards) of the California Administrative Code
UL	Underwriters' Laboratories, Inc.
UBC	Uniform Building Code
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code

All references to the specifications, standards, or other publications of any of the above are understood to refer to the current issue as revised or amended at the date of receipt of bids.

CF	Cubic Foot
CY	Cubic Yard
EA	Each
GAL	Gallon
LB	Pound
LF	Lineal Foot
LS	Lump Sum
MH	Man Hours
MI	Mile
SQFT	Square Foot
SQYD	Square Yard
STA	Station

1-3 DEFINITIONS

ADDENDA - Written or graphic Instruments issued prior to the opening of Proposals which clarify, correct, or change the bidding documents or the Contract Documents.

AGREEMENT OR CONTRACT AGREEMENT - The written Agreement between the County of Yolo and CONTRACTOR covering the Work to be performed: Other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

AS SHOWN, ETC. - Where "as shown:," "as indicated," "as detailed," or words of similar import are used, it shall be understood that reference is made to the Contract Drawings unless specifically stated otherwise. Where "as directed," "as permitted," "approved," or words of similar import are used, it shall be understood that the direction, permission, requirements, or acceptance of the ENGINEER is intended unless stated otherwise.

BASE - A layer of specified material of planned thickness placed immediately below the pavement or surfacing.

BASEMENT MATERIAL - The material in excavation or embankments underlying the lowest layer of subbase, base, pavement, surfacing or other specified layer which is to be placed.

BID AND BID FORM means Proposal.

BIDDER - Any person, partnership, firm, or corporation submitting a Proposal for the Work contemplated, acting directly or through a duly authorized representative.

BOARD OF SUPERVISORS - Governing body of the County of Yolo.

BONDS - Bid, performance, and payment bonds and other instruments of security.

CALENDAR DAY - Calendar day shall be defined as every day shown on the calendar, Sundays and holidays included. When the time for completion in the Contract is set forth in Calendar Days or Days, each and every reference to working days in these specifications shall be deemed to mean Calendar Days, unless specified otherwise.

CALTRANS - Department of Transportation, State of California.

CHIEF ENGINEER - Whenever the Words "Chief Engineer" is used in the "State Specifications," they shall mean the Director of Department of Community Services of the County of Yolo.

CONDUIT - A pipe or tube in which smaller pipes, tubes, or electrical conductors are inserted or are to be inserted.

CONSTRUCTION QUALITY ASSURANCE (CQA) INSPECTOR - The person or corporation responsible for observing and documenting activities related to quality assurance of work outlined in these Specifications, in accordance with the CQA Plan (defined below).

CONSTRUCTION QUALITY ASSURANCE PLAN (CQA PLAN) - Selected tests and observations made by an independent Construction Quality Assurance (CQA) Inspector to assure that the work, including the final product, complies with applicable regulations, standards, and project Plans and Specifications. The CQA Inspector shall perform under a separate contract with the COUNTY.

CONSULTING ENGINEER/ARCHITECT - Any person or persons, firm, partnership, or corporation legally authorized and licensed to practice Civil Engineering or Architecture in the State of California who prepares plans and specifications for the Department of Planning and Public Works, County of Yolo, for approval.

CONTRACT OR CONTRACT DOCUMENTS - A written Agreement covering the performance of the Work and the furnishing of labor and materials in the construction of the Work. The Contract Documents shall include: The Notice to CONTRACTORS, all duly issued Addenda, Proposal, Project Plans, Technical Provisions, Agreement, Bonds, and Standard Specifications, including General provisions, Standard Forms, Construction Specifications and Standard Plans contained therein; also, any and all supplemental agreements amending or extending the Work contemplated and which may be required to complete the Work in a substantial and acceptable manner. Supplemental agreements are written agreements covering alterations, amendments or extensions to the Contract and include Contract Change Orders.

CONTRACT CHANGE ORDERS - A supplemental written agreement which authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

CONTRACT PRICE - The moneys payable by the COUNTY to the CONTRACTOR and the Contract Documents as stated in the Agreement.

CONTRACT TIME - The number of days or the date stated in the Agreement for the completion of the Work.

CONTRACTOR - The person, firm, or corporation with whom the COUNTY entered into the Agreement.

CONTRACTOR'S REPRESENTATIVE OR SUPERINTENDENT - CONTRACTOR's representative at the site, who has authority to act on behalf of CONTRACTOR.

COUNTY - The County of Yolo, a public entity, existing under and by virtue of the laws of the State of California.

DAYS - Shall mean consecutive calendar days unless otherwise specified.

DEFECTIVE - An adjective which, when modifying the word Work, refers to work that is unsatisfactory, faulty or deficient, or 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, or has been damaged prior to the date of ENGINEER's Field Acceptance Letter.

DEPARTMENT - The Department of Planning and Public Works, Division of Integrated Waste Management, County of Yolo.

DESIGN ENGINEER or ARCHITECT - The Engineer, Architect, or firm engaged as an independent CONTRACTOR by the COUNTY to design the project.

The authority of the Design Engineer/Architect to monitor and review the Work for the ENGINEER shall be strictly limited to that authority specified, and no additional authority has been granted, nor shall be inferred.

DETOUR - A temporary route for traffic around a closed portion of the road.

DIRECTOR - The Director of Planning and Public Works of Yolo County acting either directly or through the Chiefs of the appropriate Divisions of the Department or their authorized representatives.

DIVIDED HIGHWAY - A highway with separated traveled ways for traffic, generally in opposite directions.

DRAWINGS - See PLANS.

EFFECTIVE DATE OF THE AGREEMENT - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated to, means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER - The Director of Department of Community Services of the County of Yolo acting either directly or through his properly authorized agents, designated by him in writing, such agents acting within the scope of the particular duties delegated to them.

ENGINEER'S ESTIMATE - The list of estimated quantities of Work to be performed, as contained in the Proposal Form.

FEDERAL AGENCIES - Whenever, in the specifications, reference is made to any Federal agency or officer, such reference shall be deemed made to any agency or officer succeeding in accordance with law to the powers, duties, jurisdiction, and authority of the agency or officer mentioned.

FEDERAL SPECIFICATIONS - The particularly designated Standard Specifications of the United States Government.

FIELD ACCEPTANCE LETTER - A letter issued to CONTRACTOR by the ENGINEER upon completion by CONTRACTOR of all the Work, including Punch List Items, to ENGINEER's satisfaction. The date of that letter will be commencement date of guaranty periods.

FIELD ORDER - A written order issued by ENGINEER which orders minor changes in the Work but which does not involve a change in the Contract Price or the Contract Time.

FIXED COSTS - Any necessary labor, material, and equipment costs directly expended on the item or items under consideration which remain constant regardless of the quantity of the Work done.

GENERAL PROVISIONS or GENERAL PROVISIONS OF THE CONSTRUCTION CONTRACT

- A part of Contract Documents, included in these Standard Specifications, set forth the conditions and requirements applicable to all Construction Contracts originated by the Department.

GRADING PLANE - The surface of the basement material upon which the lowest layer of subbase, base, pavement, surfacing, or other specified layer, is placed.

GREEN WASTE – Processed green material, ground yard waste(leave, grass, brush, etc.)

HIGHWAY - The whole right-of-way, or area which is reserved for, and secured for use in constructing the roadway and its appurtenances.

INSPECTOR - All persons employed by the COUNTY to be responsible to the ENGINEER, and under his direction, to inspect the Work as the construction proceeds.

LABORATORY - The County of Yolo laboratory or the designated materials testing laboratory authorized by the Director of Planning and Public Works, Division of Integrated Waste Management to test materials and Work involved in the Contract.

LEGAL HOLIDAYS - Those days designated as State holidays in the California Government Code.

LIQUIDATED DAMAGES - The amount prescribed in the Contract Documents pursuant to the authority of the California Government Code Section 53069.85, to be paid to the COUNTY or to be deducted from any payment due or to become due to the CONTRACTOR, for each Calendar Day's delay beyond the time allowed in the Contract Documents for completing the whole, or any specified portion of the Work, or causing or allowing any disruption in the normal operations of the landfill as further described in Section 9-5.

LITTER – Any garbage or trash encountered in the green waste or foundation layer soil during clearing and grubbing activities.

LOCAL AGENCY PUBLIC CONSTRUCTION ACT - Part 3, Chapter 1, of the California Public Contract Code. The provisions of this Act and other applicable laws form and constitute a part of the provisions of the Contract Documents to the same extent as if set forth therein in full.

MANUAL OF TRAFFIC CONTROLS - The State of California Department of Transportation publication entitled "MANUAL OF TRAFFIC CONTROLS for Construction and Maintenance Work Zones."

NOTICE TO PROCEED - A written notice given by The Director of Planning and Public Works of the County of Yolo 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.

PAVEMENT - The uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeable with surfacing.

PLANS or DRAWINGS - The drawings which show the character and scope of the Work to be performed and which have been approved by the Director and are referred to in the Contract Documents. The Plans being a part of the Contract Documents include the following whether or not reproduced in the Technical Provisions:

- (A) **STANDARD DRAWINGS** - The Yolo County Department of Planning and Public Works Standard Plans, as included in these Standard Specifications.
- (B) **PROJECT DRAWINGS** - The plans listed as Project Drawings in the Technical Provisions. These plans show specific layouts, profiles, typical cross-sections, sections, details and dimensions peculiar to the Work, and supplemented by the Standard Plans insofar as the same may apply.
- (C) Any other Plans or Drawings referred to in the Technical Provisions, in the Standard Construction Specifications, Standard Drawings or Project Drawings.

PROJECT - The total construction of which the Work to be provided under the Contract Documents may be the whole, or part, as indicated elsewhere in the Contract Documents.

PROPOSAL - The offer of the Bidder for the Work when made out and submitted on the prescribed Proposal Form, properly signed and guaranteed.

PROPOSAL FORM - The approved form upon which the COUNTY requires formal bids be prepared and submitted for the Work.

PROPOSAL GUARANTY - The cash, cashier's check, certified check, or bidder's bond accompanying the proposal submitted by the Bidder, as a guaranty that the Bidder will enter into a Contract with the COUNTY for the performance of the Work if the Contract is awarded to him.

PUNCH LIST - A written list of deficiencies to be remedied by CONTRACTOR prior to final acceptance of the Work by the ENGINEER.

REFERENCE SPECIFICATIONS - Building, Electrical and Plumbing Codes, Manufacturer's Specifications or Recommendations, and any other codes, specifications, or reference materials specified in the Contract Documents.

RESIDENT ENGINEER or RESIDENT PROJECT REPRESENTATIVE - The authorized representative of ENGINEER who is assigned to the site or any part thereof, or the ENGINEER himself if no other person has been designated the authority of a Resident Engineer.

ROADBED - The roadbed is that area between the intersection of the upper surface of the roadway and the side slopes or curb lines. The roadbed rises in elevation as each increment or layer of subbase, base, surfacing or pavement is placed. Where the medians are so wide as to include areas of undisturbed land, a divided highway is considered as including two separate roadbeds.

ROADWAY - That portion of the highway included between the outside lines of sidewalks, or curbs, slopes, ditches, channels, waterways, and including all the appertaining structures, and other features necessary to proper drainage and protection.

SATISFACTORY MATERIALS - Materials which comply with the requirements of these Specifications and the Plans.

SHOP DRAWINGS - All drawings, diagrams, illustrations, schedules, calculations, and other data which are specifically prepared by, or for CONTRACTOR, to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work. Shop Drawings shall be submitted by CONTRACTOR to the ENGINEER for ENGINEER's review and approval.

SHOULDERS - The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

STANDARD CONSTRUCTION SPECIFICATIONS - A part of the Contract Documents included in these Standard Specifications, consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work encountered in the Yolo County Planning and Public Works projects, and certain administrative details applicable thereto.

STANDARD SPECIFICATIONS or YOLO STANDARD SPECIFICATIONS - These Specifications containing: General Provisions for Construction Contracts, Standard Construction Specifications, Standard Forms, and Standard Drawings. The Board of Supervisors of the County of Yolo has adopted these Specifications as the Standard Specifications for its Department of Planning and Public Works Contracts. When the Standard Specifications of other organizations or agencies, or parts of such Specifications, are referred to in these Specifications, such Standard Specifications of other organizations or agencies, or parts of such Specifications, are included in, and a part of, these Specifications.

STATE SPECIFICATIONS - The Standard Specifications of the State of California, Department of Transportation, also known as CALTRANS Standard Specifications, as currently approved and in effect. In referring to the State Specifications, the section numbers referred to are those contained in this current edition. If, in subsequent editions, the section numbers are changed, the reference shall be construed to refer to the class of material or items in the latest edition which was designated by that number in said current edition.

STATE - Whenever the word "State" is used in the "State Specifications," it shall mean the County of Yolo, State of California.

SUBBASE - A layer of specified material of planned thickness between a base and the basement material.

SUBCONTRACTOR - An individual, firm, or corporation, having a direct contract with CONTRACTOR or with any other SUBCONTRACTOR, who will perform work or labor or render service to the CONTRACTOR in or about the construction of the Work or improvement, or a SUBCONTRACTOR licensed by the State of California who, under subcontract to the CONTRACTOR, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the CONTRACTOR's total bid for the Work.

SUBGRADE - That portion of the roadbed on which pavement, surfacing, base, subbase, or a layer of any other material is placed.

SUPPLIER - A manufacturer, fabricator, supplier, distributor, materialman, or vendor.

TECHNICAL SPECIFICATIONS - A part of Contract Documents describing the Work and setting forth specific conditions or requirements peculiar to the Work, and supplementary to these Standard Specifications.

TRAFFIC LANE - That portion of a traveled way for the movement of a single line of vehicles.

TRAVELLED WAY - That portion of the roadway for the movement of vehicles, exclusive of shoulders.

UNDERGROUND FACILITIES - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasement 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.

UNSATISFACTORY MATERIALS - Materials which do not comply with the requirements of these Specifications and the Plans.

UTILITY - Tracks, overhead or underground wires, pipelines, conduits, ducts, or structures, sewers or storm drains owned, operated, or maintained in or across a public right-of-way or private easement, whether existing or proposed.

WASTE - Any objects encountered during excavation or clear and grub operations that are not dirt, vegetation, or litter.

WORK - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

WORKING DAY - A working day is defined as any day, except as follows:

- (A) Saturdays, Sundays, and Legal Holidays.
- (B) Days on which CONTRACTOR is prevented by inclement weather or conditions resulting immediately therefrom, adverse to the current controlling operation or operations as determined by the ENGINEER, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations.

The Time of Completion (number of working days from the Notice to Proceed) specified in the Contract Documents shall be considered as of the essence to the Contract.

WORK DIRECTIVE CHANGE - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by the Director ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed, or to emergencies. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time.

SECTION 2 - PROPOSAL REQUIREMENTS AND CONDITIONS

2-1 APPROXIMATE ESTIMATE

The quantities given in the Notice to CONTRACTORS, Proposal, and Contract forms are approximate only, being given as a basis for the comparison of bids. The COUNTY does not, expressly or by implication, agrees that the actual amount of Work will correspond therewith. The COUNTY also reserves the right to increase or decrease the amount of any class or portion of the Work, or to delete any portion of the Work, as may be deemed necessary or advisable by the ENGINEER.

2-2 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK

The Bidder shall examine carefully the site of the Work contemplated, as well as the Proposal, Plans, Specifications, and Contract Forms therefor.

The submission of a Bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of Work to be performed, the quantities of materials to be furnished, and as to the requirements of the Proposal, Plans, Specifications, and the Contract.

Where the Department has made investigations of site conditions including subsurface conditions in areas where Work is to be performed under the Contract, or in other areas, some of which may constitute possible local material sources, such investigations are made only for the purpose of study and design. Where such investigations have been made, Bidders or CONTRACTORS may, upon written request, inspect the records of the Department as to such investigations subject to and upon the conditions hereinafter set forth. Such inspection of records may be made at the office of the Department.

The records of such investigations are not a part of the Contract and are shown solely for the convenience of the Bidder or CONTRACTOR. It is expressly understood and agreed that the COUNTY assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretations set forth therein or made by the Department in its use thereof, and there is no warranty or guaranty either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

When a log of test borings or other record of geotechnical data obtained by the Department's investigation of subsurface conditions is included with the Contract Plans, it is expressly understood and agreed that said record does not constitute a part of the Contract, represents only the opinion of the Department as to the character of the materials or the conditions encountered by it in its investigations, is included in the Plans only for the convenience of Bidders and its use is subject to all of the conditions and limitations set forth in this Section 2-2.

When contour maps are used in the design of the project, the Bidders may inspect such maps, and if available, they may obtain copies for their use.

The availability or use of information described in this Section 2-2 is not to be construed in any way as a waiver of the provisions of the first paragraph in this Section, and a Bidder or

CONTRACTOR is cautioned to make such independent investigation and examination as he deems necessary to satisfy himself as to conditions to be encountered in the performance of the Work and with respect to possible local material sources, the quality and quantity of material available from such property, and the type and extent of processing that may be required in order to produce material conforming to the requirements of the Specifications.

No information derived from such inspection of records of investigations or compilation thereof made by the Department, or from the ENGINEER, or his assistants, will in any way relieve the Bidder or CONTRACTOR from any risk or from properly fulfilling the terms of the Contract.

2-3 BIDDER'S PROPOSAL

All Proposals shall be made upon blank forms obtained from the Yolo County Department of Planning and Public Works as set forth in the Notice to CONTRACTORS. The Bidder shall submit a Proposal on these forms. Proposals submitted on forms other than the one issued to the Bidder will be disregarded. The Proposal shall set forth for each item of Work, in clear legible figures, the item price and total for each item. The Bidder shall fill out all blanks in the Proposal form as therein required.

The Proposal, Bond Forms, and Contract Agreement are bound separately from the Notice to CONTRACTORS, General Provisions, Technical Provisions, and Plans. No part of the Proposal, Bond Forms, and Contract Agreement booklet shall be detached therefrom. The page numbers of each bound document are numbered sequentially, and by submitting his Proposal, the CONTRACTOR certifies that he has received and reviewed all pages.

The Proposal must be signed with the full name of the Bidder; if a partnership, by a member of the firm; if a limited partnership, by a general partner; if a corporation, by the appropriate officer thereof in the corporate name with the seal attached. When Proposals are signed by an agent other than the officer or officers of a corporation authorized to sign Contracts on its behalf, or a member of a partnership, a "Power of Attorney" must be on file with the COUNTY prior to opening bids, or shall be submitted with the Proposal. All Proposals otherwise submitted will be rejected as irregular and unauthorized.

The Proposal shall consist of:

1. Bidder's Statement of Financial Responsibility, Technical Ability and Experience.
2. Bidder's Statement of SUBCONTRACTORS.
3. Bidder's Bond
4. Bidder's Certification of Affirmative Action for Equal Employment Opportunity.
5. Proposal.

Failure to furnish any of the above may result in rejection of the Proposal.

All Proposals shall be submitted as directed in the "Notice to CONTRACTORS," under sealed cover conspicuously marked as a Proposal, and identifying the project to which the Proposal relates and the date of the bid opening therefor. Proposals which are not properly marked or sealed may be disregarded.

2-4 REJECTION OF PROPOSALS

The COUNTY reserves the right to reject any or all proposals. Proposals may be rejected if they show any alteration of form, additions not called for, conditional bids, incomplete bids, erasures or irregularities of any kind.

2-5 PROPOSAL GUARANTY

All Proposals shall be accompanied by cash, cashier's check, certified check or Bidder's bond, made payable to the County of Yolo. The amount of said requirement shall be not less than ten (10%) percent of the amount of the attached bid. The Bidder's bond shall be executed by a corporation, as surety, authorized to issue surety bonds in the State of California. This requirement is a guaranty that, if awarded the Contract, the Bidder will sign the Agreement to do the Work. In the event of the Bidder's failure to sign the Contract, after such award for the Work, the cash, check or Bidder's bond shall be forfeited to the County of Yolo as liquidated damages. The parties hereby agree and acknowledge that it is impossible or extremely impractical to figure damages in such an event.

2-6 WITHDRAWAL OF PROPOSALS

Any Proposal may be withdrawn at any time prior to the hour fixed in the Notice to CONTRACTORS for the opening of Proposals. A written request for the withdrawal of the Proposal shall be filed with the County Clerk, and shall be executed by the Bidder or his duly authorized representative. The withdrawal of a Proposal shall not prejudice the right of a Bidder to file a new Proposal.

Whether or not the Proposals are opened exactly at the time fixed in the Notice to CONTRACTORS, a Proposal will not be received after that time, nor may any Proposal be withdrawn after the Proposal opening time.

2-7 PUBLIC OPENING OF PROPOSALS

Proposals will be opened and read publicly at the time and place indicated in the Notice to CONTRACTORS. Bidders, or their authorized agents, are invited to be present.

2-8 BIDDER'S STATEMENT OF FINANCIAL RESPONSIBILITY, TECHNICAL ABILITY, AND EXPERIENCE

A record of the Bidder's experience in construction of a type similar to that contemplated under this Contract shall be set forth in the Proposal documents. It is the intent of the COUNTY to award the Contract to the Bidder who furnishes satisfactory evidence of having the requisite experience and ability to enable him to prosecute the Work successfully and properly, as well as to complete it within the time named in the Contract.

To determine the degree of responsibility to be credited to the Bidder the COUNTY will weigh evidence that the Bidder has satisfactorily performed other Contracts of like nature, magnitude, and comparable difficulty and rates of progress. Information provided by bidders on similar contracts shall, at a minimum, include; Project name, project owner, contact name and phone number, year completed, contract value, quantity and type of material(s) installed.

Satisfactory evidence shall be defined to include:

- A) Installation of over 15,000,000 square feet of HDPE geomembrane for nonhazardous or hazardous waste facilities with at least three projects in excess of 1,000,000 square feet each.
- B) Installation of at least two geosynthetic clay liner projects of at minimum 500,000 square feet each.
- C) Installation of at least 1,000,000 square feet of drainage geocomposite.

SUBCONTRACTORS may be used to satisfy any of these requirements. The SUBCONTRACTORS used and their experience shall be noted on the bid proposal.

2-9 BIDDER'S STATEMENT OF SUBCONTRACTORS

Each Bidder making a Proposal to perform Work described in these Specifications shall comply with the requirements of the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 et seq.), which forbids Bid shopping and Bid peddling and which requires accurate listing of all SUBCONTRACTORS.

The Proposal shall set forth the name and location of the mill shop or office of each SUBCONTRACTOR who will perform work or labor, or render service to the CONTRACTOR, in or about the construction of the Work or improvement, or a SUBCONTRACTOR licensed by the State of California who, under subcontract to the CONTRACTOR, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, and the portion of the Work which will be done by each SUBCONTRACTOR. This listing is required for SUBCONTRACTORS who will perform work or labor, or render service of a value of more than one-half (1/2%) percent of the total amount bid, regardless of the amount or in excess of one-half of 1 (1%) percent of the CONTRACTOR'S total bid or ten thousand dollars (\$10,000), whichever is greater.

Should CONTRACTOR violate any of the provisions of the Subletting and Subcontracting Fair Practices Act, such violation shall be deemed a breach of this Contract. The COUNTY shall have all remedies provided by California law, including but not limited to those provided in Public Contract Code Section 4110, allowing termination of the Contract or a penalty assessment of ten (10%) percent of the subcontract.

2-10 ADDENDA

The COUNTY may, when it deems necessary, issue Addenda to the Plans and Specifications to amend, clarify, or correct matter contained therein. Such Addenda shall constitute a part of said Plans and Specifications and shall be equally binding with them. Addenda shall be forwarded to all prospective Bidders.

SECTION 3 - AWARD AND EXECUTION OF CONTRACT

3-1 AWARD OF CONTRACT

The COUNTY reserves the right to reject any and all Proposals.

The award of the Contract, if it be awarded, will be to the lowest responsible Bidder whose Proposal complies with all the requirements prescribed. Such award, if made, will be made within sixty (60) days after the opening of Proposals. If the lowest responsible Bidder refuses or fails to execute the Contract, the Board of Supervisors may award the Contract to the second lowest responsible Bidder. Such award, if made, will be made within ninety (90) days after the opening of the Proposals. If the second lowest responsible Bidder refuses or fails to execute the Contract, the Board of Supervisors may award the Contract to the third lowest responsible Bidder. Such award, if made, will be made within one-hundred twenty (120) days after the opening of the Proposals. The periods of time specified above within which award of Contract may be made shall be subject to extension for such further period as may be agreed upon in writing between the COUNTY and the Bidder concerned.

All Proposals will be compared on the basis of the ENGINEER's estimate of the quantities of Work to be done.

3-2 EXECUTION OF CONTRACT

The Contract shall be signed in duplicate by the successful Bidder and returned, together with the required Insurance Certificates, within ten (10) days, not including Sundays and legal holidays, after the Bidder has received notice that the Contract has been awarded.

3-3 CONTRACT BONDS

Within (10) ten days of the approval of the Agreement by the Board of Supervisors, CONTRACTOR shall file with the COUNTY a Performance Bond and a Payment Bond. The Bonds shall be executed by a surety, authorized to do business in the State of California, and shall be acceptable to the COUNTY. The Performance Bond shall be equal to one-hundred (100%) percent of the Contract price. The Payment Bond shall be equal to one-hundred (100%) percent of the Contract price. All Bonds shall be in American dollars. All Bonds shall be furnished on forms provided by the COUNTY as included in the Contract Bid Documents.

No change or alteration of the Work or modification of the Contract between the COUNTY and CONTRACTOR shall release or exonerate any surety or sureties upon said Bonds. For the purpose of protecting the COUNTY against any failure of CONTRACTOR to perform the Contract and make full payment thereunder for all Work done and materials furnished, the principal and sureties on said Bonds, in consideration of the approval thereof by the COUNTY, shall expressly recite and covenant therein that if, in the opinion of the COUNTY, any change of the conditions surrounding said Work, any increase in the total amount of cost thereof, or any diminution of the security furnished by said Bonds renders the same insufficient, such additional security as may be required by the COUNTY shall be furnished by the principal on said Bonds within ten (10) days after notice of such requirement, and that default in the furnishing of such additional security shall be deemed a breach of the Contract on the part of CONTRACTOR, and that no change in the Plans or Specifications and no agreement for reduced, added, or extra

Work in accordance with the provisions therefore, whether with or without notice to, or consent by, the sureties, shall relieve any of the parties to said Bonds.

3-4 FAILURE TO EXECUTE CONTRACT

Failure of the lowest responsible Bidder, the second lowest responsible Bidder, or the third lowest responsible Bidder to execute the Contract and file Insurance as provided herein within ten (10) days, not including Sundays and legal holidays, after such Bidder has received notice that the Contract has been awarded to him shall be just cause for the forfeiture of the Proposal guaranty. The successful Bidder may file with the Director of Planning and Public Works a written notice, signed by the Bidder or his authorized representative, specifying that the Bidder will refuse to execute the Contract if presented to him. The filing of such notice shall have the same force and effect as the failure of the Bidder to execute the Contract and furnish acceptable Bonds and Insurance Certification within the time hereinbefore prescribed.

3-5 RETURN OF PROPOSAL GUARANTIES

Within ten (10) days after the award of the Contract to the lowest responsible Bidder, the COUNTY will return the Proposal guaranties to all Bidders that are not to be further considered in making the award, but will continue to retain the Proposal guaranties submitted by the first, second, and third lowest Bidders. Retained Proposal guaranties will be held until the Contract has been finally executed, after which all Proposal guaranties, except Proposal guaranties which have been forfeited, will be returned to the respective Bidders whose Proposals they accompany.

3-6 CONTRACTOR'S GUARANTY

Unless otherwise specified in the Contract Documents, CONTRACTOR shall unconditionally guaranty all materials, workmanship and equipment against defect for a period of one (1) calendar year, commencing on the date of recordation of the Notice of Completion.

During this unconditional guaranty period, the CONTRACTOR shall, upon the receipt of notice in writing from the COUNTY, promptly make all repairs caused by defective materials, workmanship or equipment.

By executing the Contract Documents, CONTRACTOR agrees that the COUNTY is authorized to provide for such repairs if, ten (10) days after receipt of written notice from the COUNTY, the CONTRACTOR has failed to make or undertake, with due diligence, the repairs. In the case of an emergency where, in the opinion of the ENGINEER, delay could cause serious loss or damage, repairs may be made by the COUNTY without notice being sent to CONTRACTOR, and all expense associated therewith shall be charged to CONTRACTOR.

The contract bonds furnished in accordance with Section 3-3, "Contract Bonds," of these Specifications must remain in full force and effect during the guarantee period and until all corrective work is complete.

In the case of conflict between this guarantee provision and any warranty provision included in the contract, the warranty provision shall govern for the specific construction product or feature covered.

Nothing in this Section shall be construed to be a waiver of any additional rights or remedies available to the COUNTY through local, State, and Federal ordinances and codes.

3-7 PRE-CONSTRUCTION CONFERENCE

Prior to start of construction, a conference will be called for the purpose of reviewing the construction program with CONTRACTOR. At this conference the sequence of Work, methods of access to the construction site, and temporary facilities shall be agreed upon by CONTRACTOR and ENGINEER. Coordination of utilities within the project limits, including relocations and maintenance of existing facilities and additions thereto, shall be confirmed in writing by utility representatives and CONTRACTOR at this conference or within five (5) working days thereafter.

SECTION 4 - SCOPE OF WORK AND CHANGES

4-1 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Plans and Specifications is to prescribe the details for the construction and completion of the Work, which the CONTRACTOR agrees to perform in accordance with the terms of the Contract. Where the Plans and Specifications describe portions of the Work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, CONTRACTOR shall furnish all labor, materials, tools, equipment, and incidentals, and do all the Work involved in executing the Contract in a satisfactory and expert manner. The Work performed under the Contract shall result in a complete operating system in satisfactory working condition with respect to the functional purposes of the installation, and no extra compensation will be allowed for anything omitted but fairly implied.

4-2 CONFORMANCE WITH CODES AND STANDARDS

All Work and materials shall be in full accordance with the latest adopted standards and regulations of the State Fire Marshal; the California Building Code; Title 24 of the California Administrative Code; the California Electrical Code; the California Plumbing Code; and other applicable codes, laws, or regulations. Nothing in these Plans or Specifications is to be construed to permit Work not conforming to these requirements. When the Work detailed in the Plans and Specifications differs from governing codes, CONTRACTOR shall furnish and install the higher standard called for.

4-3 CHANGES

The COUNTY reserves the right to make alterations, deviations, additions to, or deletions from the Plans and Specifications. This includes the right to increase or decrease the quantity of any item or portion of the Work or to delete any item or portion of the Work, as determined by the ENGINEER to be necessary or advisable. The ENGINEER may also require Extra Work as deemed necessary for the proper completion or construction of the whole Work contemplated.

Any such changes will be set forth in a Contract Change Order. It will specify, in addition to the Work to be done in connection with the change made, adjustment of Contract time, if any, and the basis of compensation for such Work. A Contract Change Order will not become effective until approved by the Director.

Upon receipt of an approved Contract Change Order, CONTRACTOR shall proceed with the ordered Work. If ordered in writing by the ENGINEER, CONTRACTOR shall proceed with the Work, so ordered, prior to actual receipt of an approved Contract Change Order therefor. In such case, the ENGINEER will, as soon as practicable, issue an approved Contract Change Order for such Work and the provisions in Section 4-3.1, "Procedure and Protest," shall be fully applicable to such subsequently issued Contract Change Order.

When the compensation for an item of Work is subject to adjustment under the provisions of this Section, the CONTRACTOR shall, upon request, furnish the ENGINEER with adequate detailed cost data for such item of Work. If the CONTRACTOR requests an adjustment in compensation for an item of Work as provided in Sections 4-3.2.1 or 4-3.2.2, such cost data shall be submitted with his request.

4-3.1 PROCEDURE AND PROTEST

A Contract Change Order approved by the ENGINEER may be issued to CONTRACTOR at any time. Should CONTRACTOR disagree with any terms or conditions set forth in an approved Contract Change Order which has not been executed, CONTRACTOR shall submit a written protest to the ENGINEER. This written protest shall be submitted within 15 days after the receipt of such approved Contract Change Order. The protest shall state the points of disagreement, and, if possible, the Contract Specification references, quantities, and costs involved. If a written protest is not submitted, payment will be made as set forth in the approved Contract Change Order. Such payment shall constitute full compensation for all Work included therein or required thereby. Such unprotested approved Contract Change Orders will be considered as executed Contract Change Orders as that term is used in these Specifications, and in particular in Sections 4-3.2 to 4-3.4, inclusive.

Where the protest concerning an approved Contract Change Order relates to compensation, the compensation payable for all Work specified or required by said Contract Change Order to which such protest relates, will be determined as provided in Sections 4-3.2 to 4-3.4, inclusive. CONTRACTOR shall keep full and complete records of the cost of such Work. He shall also permit the ENGINEER to have such access thereto as may be necessary to assist in the determination of the compensation payable for such Work.

Proposed Contract Change Orders may be presented to CONTRACTOR for consideration prior to approval by the ENGINEER. If CONTRACTOR signifies acceptance of the terms and conditions of such proposed Contract Change Order by executing such document, and if such Contract Change Order is approved by the Director and issued to CONTRACTOR, payment in accordance with the provisions as to compensation therein set forth, shall constitute full compensation for all Work included therein or required thereby. A Contract Change Order executed by CONTRACTOR and approved by the Director is an executed Contract Change Order as provided in these Specifications, especially Sections 4-3.2 to 4-3.4, inclusive. An approved Contract Change Order shall supersede a proposed, but unapproved, Contract Change Order covering the same Work.

The ENGINEER may provide for an adjustment of compensation as to a Contract item of Work included in a Contract Change Order. This adjustment will be determined as provided in Sections 4-3.2 to 4-3.4, inclusive, if such item of Work is eligible for an adjustment of compensation thereunder.

4-3.2 INCREASED OR DECREASED QUANTITIES

Increases or decreases in the quantity of a Contract item of Work will be determined by comparing the total pay quantity of such item of Work with the ENGINEER's Estimate therefor.

If the total pay quantity of any item of Work required under the Contract varies from the ENGINEER's Estimate therefor by 25 percent or less, payment will be made for the quantity of Work of said item performed at the Contract unit price therefor, unless eligible for adjustment pursuant to Section 4-3.3, "Changes in Character of Work."

If the total pay quantity of any item of Work required under the Contract varies from the ENGINEER's Estimate therefor by more than 25 percent, in the absence of an executed Contract Change Order specifying the compensation to be paid, the compensation payable to the CONTRACTOR will be determined in accordance with Sections 4-3.2.1, 4-3.2.2, or 4-3.2.3, as the case may be.

4-3.2.1 INCREASES OF MORE THAN 25 PERCENT

Should the total pay quantity of any item of Work required under the Contract exceed the ENGINEER's Estimate therefor by more than 25 percent, the Work in excess of 125 percent of such estimate and not covered by an executed Contract Change Order specifying the compensation to be paid therefor, will be paid for by adjusting the Contract unit price, as hereinafter provided, or at the option of the ENGINEER, payment for the Work involved in such excess will be made on the basis of force account as provided in Section 10-4.

Such adjustment of the Contract unit price will be the difference between the Contract unit price and the actual unit cost, which will be determined as hereinafter provided, of the total pay quantity of the item. If the costs applicable to such item of Work include fixed costs, such fixed costs will be deemed to have been recovered by CONTRACTOR by the payments made for 125 percent of the ENGINEER's Estimate of the quantity of such item, and in computing the actual unit cost, such fixed costs will be excluded. Subject to the above provisions, such actual unit cost will be determined by the ENGINEER in the same manner as if the Work were to be paid for on a force account basis as provided in Section 10-4, or such adjustment will be as agreed to by CONTRACTOR and the ENGINEER.

When the compensation payable for the number of units of an item of Work performed in excess of 125 percent of the ENGINEER's Estimate is less than \$5,000 at the applicable Contract unit price, the ENGINEER reserves the right to make no adjustment in said price, except that an adjustment will be made if requested in writing by CONTRACTOR.

4-3.2.2 DECREASES OF MORE THAN 25 PERCENT

Should the total pay quantity of any item of Work required under the Contract be less than 75 percent of the ENGINEER's Estimate therefor, an adjustment in compensation pursuant to this Section will not be made unless CONTRACTOR so requests in writing. If CONTRACTOR so requests, the quantity of said item performed, unless covered by an executed Contract Change Order specifying the compensation payable therefor, will be paid for by adjusting the Contract unit price as hereinafter provided. At the option of the ENGINEER, payment for the quantity of Work of such item performed will be made on a force account basis as provided in Section 10-4, provided however, that in no case shall the payment for such Work be less than that which would be made at the Contract unit price.

Such adjustment of the Contract unit price will be the difference between the Contract unit price and the actual unit cost, which will be determined as hereinafter provided, of the total pay quantity of the item, including fixed costs. Such actual unit cost will be determined by the ENGINEER in the same manner as if the Work were to be paid for on a force account basis as provided in Section 10-4; or such adjustment will be as agreed to by CONTRACTOR and the ENGINEER.

The payment for the total pay quantity of any such item of Work will in no case exceed the payment which would be made for the performance of 75 percent of the ENGINEER's Estimate of the quantity for such item at the original Contract unit price.

4-3.2.3 ELIMINATED ITEMS

Should any Contract item of the Work be eliminated in its entirety, in the absence of an executed Contract Change Order covering such elimination, payment will be made to CONTRACTOR for actual costs incurred in connection with such eliminated Contract item, if incurred prior to the date of notification in writing by the ENGINEER of such elimination.

If acceptable materials ordered by CONTRACTOR for the eliminated item prior to the date of notification of such elimination by the ENGINEER, and if orders for such material cannot be

cancelled, it will be paid for at the actual cost to the CONTRACTOR. In such case, the material paid for shall become the property of the COUNTY and the actual cost of any further handling will be paid for. If the material is returnable to the vendor and if the ENGINEER so directs, the material shall be returned and CONTRACTOR will be paid for the actual cost of charges made by the vendor for returning the material. Payment will be made for the actual cost of handling returned material.

Payment for the actual costs or charges as provided in this Section 4-3.2.3 will be computed in the same manner as if the Work were to be paid for on a force account basis as provided in Section 10-4.

4-3.3 CHANGES IN CHARACTER OF WORK

If an ordered change in the Plans and Specifications materially changes the character of the Work of a Contract item from that on which CONTRACTOR based the bid price, and if the change increases or decreases the actual unit cost of such changed item as compared to the actual or estimated actual unit cost of performing the Work of said item in accordance with the Plans and Specifications originally applicable thereto, in the absence of an executed Contract Change Order specifying the compensation payable, an adjustment in compensation therefor will be made in accordance with the following:

The basis of such adjustment in compensation will be the difference between the actual unit cost to perform the Work of said item, or portion thereof, involved in the change as originally planned and the actual unit cost of performing the Work of said item, or portion thereof, involved in the change, as changed. Actual unit costs will be determined by the ENGINEER in the same manner as if the Work were to be paid for on a force account basis as provided in Section 10-4, or such adjustment will be as agreed to by CONTRACTOR and the ENGINEER. Any such adjustment will apply only to the portion of the Work of said item actually changed in character. At the option of the ENGINEER, the Work of said item or portion of item which is changed in character will be paid for on a force account basis, as provided in Section 10-4.

If the compensation for an item of Work is adjusted under this Section 4-3.3, the costs recognized in determining such adjustment shall be excluded from consideration in making an adjustment for such item of Work under the provisions in Section 4-3.2, "Increased or Decreased Quantities."

Failure of the ENGINEER to recognize a change in character of the Work at the time the approved Contract Change Order is issued shall not be construed as relieving CONTRACTOR of his duty and responsibility of filing a written protest within the 15 day limit as provided in Section 4-3.1, "Procedure and Protest."

4-3.4 EXTRA WORK

New and unforeseen Work will be classed as Extra Work when determined by the ENGINEER that such Work is not covered by any of the various items for which there is a bid price or by combinations of such items. In the event portions of such Work are determined by the ENGINEER to be covered by some of the various items for which there is a bid price or combination of such items, the remaining portion of such Work will be classed as Extra Work. Extra Work also includes Work specifically designated as Extra Work in the Plans and Specifications.

CONTRACTOR shall do such Extra Work and furnish labor material and equipment therefor upon receipt of an approved Contract Change Order or other written Order on the ENGINEER. In the absence of such approved Contract Change Order or other written Order of the ENGINEER, CONTRACTOR shall not be entitled to payment for such Extra Work.

Payment for Extra Work required to be performed pursuant to the provisions in this Section 4-3.4, in the absence of an executed Contract Change Order will be made on a force account basis, as provided in Section 10-4, or as agreed to by CONTRACTOR and the ENGINEER.

4-3.5 EFFECT OF EXTENSION OF TIME

The granting of an Extension of Time for the completion of the Work on account of delays which in the judgment of the ENGINEER are unavoidable delays or granted for the execution of Extra or additional Work, shall in no way operate as a waiver on the part of the COUNTY of any of its rights under this Contract.

SECTION 5 - RESPONSIBILITIES OF THE CONTRACTOR

5-1 SUPERVISION AND SUPERINTENDENCE

1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction which is indicated in, and required by, the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.
2. CONTRACTOR shall keep on the Site, at all times during its progress, a competent resident superintendent, who shall not be replaced without written notice to COUNTY and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.
3. The right of general supervision shall not make the CONTRACTOR an agent of the COUNTY; and the liability of the CONTRACTOR for all damages to persons or to public or private property, arising from the execution of the Work, shall not be lessened because of such general supervision.

5-2 LABOR, MATERIALS AND EQUIPMENT

1. CONTRACTOR shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons, the Work, or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents.
2. Unless otherwise specified in the Contract Documents, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of Work.
3. All materials and equipment shall be good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents.

5-3 DISMISSAL OF UNSATISFACTORY EMPLOYEES

If any person employed by CONTRACTOR or any SUBCONTRACTOR shall fail or refuse to carry out the directions of the ENGINEER, or is, in the opinion of the ENGINEER, incompetent, unfaithful, intemperate, or disorderly, or uses threatening or abusive language to any person representing the COUNTY on the Work, or if otherwise unsatisfactory, he shall be removed from the Work immediately, and shall not again be employed on the Work except with the consent of the ENGINEER.

5-4 SUBCONTRACTING AND ASSIGNMENT

The performance of the Contract may not be subcontracted or assigned except upon written consent of the COUNTY, and no such subcontracting or assignment shall be permitted which would relieve the original CONTRACTOR or his surety of their responsibilities under the CONTRACT.

The CONTRACTOR shall not, without the written consent of the COUNTY: (a) substitute any party as SUBCONTRACTOR in place of the SUBCONTRACTOR designated in the original Proposal, or (b) permit any such subcontract to be assigned or transferred, or allow it to be performed by anyone other than the original SUBCONTRACTOR listed on the Proposal. Consent to such substitution or subletting shall only be given: (1) When the SUBCONTRACTOR listed in the Proposal after having had a reasonable opportunity to do so fails or refuses to execute a written Contract, when such written Contract, based upon the general terms, conditions, Plans, and Specifications for the project involved or the terms of such SUBCONTRACTOR's written Proposal, is presented to him by the prime CONTRACTOR; or (2) when the listed SUBCONTRACTOR becomes bankrupt or insolvent; or (3) when the listed SUBCONTRACTOR fails or refuses to perform his subcontract; or (4) when the listed SUBCONTRACTOR fails or refuses to meet the Bond requirements of the prime CONTRACTOR as set forth in Section 4108 of the Public Contract Code; or (5) when the prime CONTRACTOR demonstrates to the ENGINEER, subject to the further provisions set forth in Section 4107.5 of the Public Contract Code, that the name of the SUBCONTRACTOR was listed as a result of an inadvertent clerical error; or (6) when the listed SUBCONTRACTOR is not licensed pursuant to the CONTRACTOR License Law as set forth in the Business and Professions Code; or (7) when the ENGINEER determines that the Work performed by the listed SUBCONTRACTOR is substantially unsatisfactory and not in substantial accordance with the Plans and Specification, or that the SUBCONTRACTOR is substantially delaying or disrupting the progress of the Work.

In the event of such substitution, the COUNTY shall give at least five working days' notice, in writing, to the listed SUBCONTRACTOR, unless the said SUBCONTRACTOR involved has himself advised the COUNTY, in writing, that he has knowledge of the prime CONTRACTOR's request for the substitution.

CONTRACTOR may assign monies due or to become due him under the Contract, and such assignment will be recognized by the COUNTY, if given proper notice thereof, to the extent permitted by law, but any assignment of monies shall be subject to all deductions provided for in the Contract, and all money withheld shall be subject to being used by the COUNTY for the completion of the Work, in the event that CONTRACTOR should be in default therein.

When any portion of the Work which has been subcontracted by the CONTRACTOR is not being prosecuted in a satisfactory manner, the subcontract for such Work shall be terminated immediately by the CONTRACTOR upon written notice from the ENGINEER, and the

SUBCONTRACTOR shall not again be employed on the type of Work in which his performance was unsatisfactory.

No SUBCONTRACTOR will be recognized as such, and all persons engaged in the Work under this Contract will be considered as employees of CONTRACTOR, and their Work shall be subject to all the provisions of the Contract. The COUNTY and its representatives will deal only with CONTRACTOR who shall be responsible for the proper execution of the entire Work.

5-5 THIRD PARTY CLAIMS

CONTRACTOR shall be responsible for all third party claims and for costs or injuries incurred by a third party which result from the operations of CONTRACTOR.

5-6 ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Section 4551 of the Government Code of the State of California, the following provisions shall be a part of this Contract:

In entering into a Public Works Contract or a subcontract to supply goods, services, or materials pursuant to a Public Works Contract, CONTRACTOR or SUBCONTRACTOR offers and agrees to assign to the awarding body all right, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the Public Works Contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to CONTRACTOR without further acknowledgement by the parties.

5-7 CONTRACTOR'S SUBMITTALS

CONTRACTOR shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's instructions as specifically required in the Specifications, and all other information as may reasonably be required to demonstrate fully that the materials and equipment to be furnished and the methods of Work comply with the provisions and intent of the Specifications and Drawings. Submittals shall include, but not be limited to, all mechanical and electrical equipment and systems, reinforcing steel, fabricated items, geomembrane and geocomposite, aggregate, and piping details. All such submittals shall be furnished by email with an accurate description in the subject line. Each submittal shall have a cover page with a submittal number and accurate description. Normally the submittal will be returned to CONTRACTOR within 30 days, exclusive of any time as awaiting clarification or further information; however, the time for return will necessarily vary and may exceed 30 days depending upon the complexity of the submittal, the number of submittals, and the express needs of CONTRACTOR.

Electrical, instrumentation, control, and communication system drawings shall include elementary and loop diagram drawings, functional single line system layout drawings, connection drawings, interconnection drawings, panel/cabinet fabrication drawings, and detailed circuit board and component drawings. Detailed circuit schematics and circuit board layout drawings shall be provided which clearly show, locate, and identify all components and wiring. Each circuit board component shall be identified by the component's original manufacturer

name and part number. Industry standard part numbers shall be used. Component values, voltage\current levels, setpoints, and timing values shall be defined.

Complete annotated software/firmware source code listings and program documentation shall be provided for all electronic/electrical systems, subsystems, assemblies, parts, components, and equipment which incorporate programmable devices. All instructions and hardware necessary to load, store, modify, and activate software/firmware source codes and programs shall be provided.

All of the information required herein shall be provided even though it may be considered to be proprietary. If any of the information required herein is considered to be proprietary, the COUNTY's standard Proprietary Agreement shall be executed between the COUNTY and CONTRACTOR, stipulating that all such information will be supplied by CONTRACTOR and kept confidential by the COUNTY. All proprietary data shall be identified as a part of CONTRACTOR's Proposal and the COUNTY's Standard Proprietary Agreement shall be executed before award of Contract.

Not more than 70 percent of all electronic/electrical Work shall be paid for until all proprietary information has been submitted and approved. All submitted proprietary information shall be that which describes the final as-built Work. No part of the Work covered by the Proprietary Agreement shall be modified after proprietary submittal acceptance until after updated proprietary information has been submitted by CONTRACTOR and accepted by the ENGINEER. Updated proprietary information shall fully document all modifications to be implemented. All proprietary data shall be marked "PROPRIETARY" by CONTRACTOR.

If the information furnished shows any deviation from the Contract requirements, CONTRACTOR shall, by a statement in writing accompanying the information, advise the ENGINEER of the deviation and state the reason therefor. It shall be CONTRACTOR's responsibility to ensure there is no conflict with other submittals and to notify the ENGINEER in any case where his submittal may concern work by another CONTRACTOR of the COUNTY. He shall also ensure coordination of submittals among all related crafts.

The approval of CONTRACTOR's drawings or other descriptive material shall not relieve CONTRACTOR of responsibility for any error or of any obligation for accuracy of dimensions and details, for agreement and conformity with the Contract Drawings and Specifications, or responsibility to fulfill the Contract as prescribed. Nor shall such approval be considered as approval of any deviation or conflict unless the ENGINEER has been expressly advised of the same as set forth immediately above, and the ENGINEER has expressly approved such deviation or conflict.

No changes shall be made by CONTRACTOR in any drawing after it has been approved, and the equipment or materials shall not deviate in any way therefrom except with written approval by the ENGINEER. Fabrication or other Work performed in advance of approval shall be done entirely at CONTRACTOR's risk.

Where any item of Work is required to be installed in accordance with the manufacturer's recommendations, CONTRACTOR shall furnish three (3) complete sets of these manufacturer's installation recommendations to the ENGINEER prior to starting this phase of the Work.

For use in subsequent maintenance and operations, CONTRACTOR shall furnish, unless otherwise provided for in the Contract Documents, three (3) bound and indexed copies of maintenance and operation information supplied by the manufacturer covering all equipment and systems included in the Contract. The submittal shall include, but not be limited to:

Drawings
Illustrations
Parts Lists
Manufacturer's recommended spare parts lists
Name, address and telephone number of nearest parts and service agency
Maintenance and Service Instructions Wiring Diagrams of systems Internal Wiring
Diagrams and Circuit Board Schematics and Layout Drawings

Software including Annotated Source Lists and Programs

This submittal is required for all mechanical, electrical, instrumentation, control, communications, sound, control or special equipment and systems. CONTRACTOR shall submit the required data for review at least thirty (30) days prior to the final inspection date. Corrections, additions, and/or resubmittal of data shall be made as directed by the ENGINEER.

The ENGINEER, and other persons as he may designate, shall receive complete maintenance and operating instructions for all items included above prior to final inspection of the project.

If the drawings, descriptive materials, or maintenance and operation information required herein are proprietary, the COUNTY shall be so informed, in writing, at or before the time of submittal, and an Agreement between the COUNTY and CONTRACTOR regarding confidentiality will be executed.

5-8 SURVEYS

Unless specified otherwise in the Contract Documents CONTRACTOR is to provide all surveys, CONTRACTOR shall be responsible to do all necessary survey to layout and control the Work to the elevations, lines and, dimensions shown on the Plans. Any deviations must receive prior approval of the ENGINEER. All surveys shall be performed by or under the direction and supervision of a Registered Civil Engineer or Licensed Land Surveyor, licensed by the State of California.

Unless authorized by the ENGINEER, any Work done without line and grade will be done at CONTRACTOR's risk. CONTRACTOR shall be responsible for the accuracy of his own layout Work, and shall be liable for the preservation of all established lines and grades.

The CONTRACTOR shall be responsible for survey work for the layout of work features, grade control and performance of the Work. CONTRACTOR may, at his expense, verify COUNTY survey of vegetative cover thickness.

The CONTRACTOR shall be responsible for (1) any lines, grades, or measurements which do not comply with specified or proper tolerances, or which are otherwise defective and (2) any resultant defects in the Work.

When the Specifications require Bid Schedule items of work to be measured by surveying methods, the COUNTY shall be responsible for performing the surveys before and after the work. The ENGINEER shall calculate final quantities for payment purposes. The CONTRACTOR shall be responsible for notifying the ENGINEER in advance of surveys for bid items.

The COUNTY will perform construction record as-built surveys of the construction area immediately prior to the start of the Work and at the completion of following items: subgrade prep, anchor trench dimensions, HDPE geomembrane dimensions, and other geosynthetic material dimensions. The construction record as-built surveys shall be performed at a maximum 25-foot on-centers and at grade breaks. The CONTRACTOR shall not place other components of the construction until directed by the ENGINEER.

The CONTRACTOR shall include in his schedule sufficient time to allow completion of the surveying and give 24 hours' notice before survey will be necessary. No claims for extra costs or delays shall be made for standard surveying conducted to determine compliance with the Specifications.

The tolerances generally applicable in setting survey stakes shall be as set forth below. Such tolerances shall not supersede stricter tolerances required by the Plans or Specifications, and shall not otherwise relieve the CONTRACTOR of responsibility for measurements in compliance therewith. The CONTRACTOR shall provide local construction control points prior to any excavation and earthwork. These points shall be field-verified by the ENGINEER.

5-9 RECORD DOCUMENTS

CONTRACTOR shall maintain, in a safe place at the site, one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field 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 Shop Drawings, will be available to ENGINEER for reference at any time. Upon completion of the Work, these Record Documents, samples, and Shop Drawings will be delivered to the ENGINEER.

5-10 WEEKLY JOB MEETINGS

CONTRACTOR's representative shall be required to attend the Weekly Job Meetings as established by ENGINEER. At each meeting CONTRACTOR shall present:

- a) Updated construction schedule (3 copies) and a written Weekly Progress Report including the statement regarding proposed measures to be taken to maintain the schedule, if such Weekly Progress Report is required by ENGINEER.
- b) A set of up-to-date as-built Drawings and other Record Documents.

Minutes of the meeting shall be prepared and distributed by the ENGINEER, and shall indicate action responsibility and target date.

During the period when the Work is suspended pending delivery of materials and equipment, Weekly Meetings may be suspended by ENGINEER.

5-11 USE OF PREMISES

The COUNTY shall provide the lands, rights-of-way, and easements upon which the Work under this Contract is to be done, and such other lands as may be designated on the Contract Drawings for the use of CONTRACTOR, and CONTRACTOR shall confine his operations to within these limits.

The COUNTY's existing facilities shall not be available to the CONTRACTOR. CONTRACTOR shall provide and maintain office space, sanitary and any other facilities necessary. Facilities supplied by the CONTRACTOR shall be in compliance with all applicable regulations and laws.

The COUNTY shall make available an area of land near the project site for the CONTRACTOR to park equipment, store materials, and locate a site office, if the CONTRACTOR desires. The exact location shall be determined by the ENGINEER. Access, security measures, and utilities shall be the responsibility of the CONTRACTOR. CONTRACTOR shall clean the area so used and return it to its original condition, or better, upon completion of the Work.

CONTRACTOR shall provide, at his own expense, any additional land and access thereto that may be required for temporary construction facilities or storage of materials.

CONTRACTOR shall use the construction gate on west perimeter fence for access by large or heavy equipment. CONTRACTOR is responsible for providing his own lock that is acceptable to the COUNTY and identified by a unique mark and registered with the ENGINEER. CONTRACTOR is responsible for keeping the gate locked at all times when not in use. Failure to lock the gate when gate is not being controlled by CONTRACTOR's Personnel or after its use will result in a deduction of \$500 per occurrence from the CONTRACTOR'S progress pay estimate.

CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers, to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the COUNTY or the ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold the COUNTY and the ENGINEER harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any such other party against the COUNTY or the ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

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. If CONTRACTOR's activities expose waste or litter, CONTRACTOR shall pick up and dispose within 24 hours. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and, debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by the COUNTY. At the end of each day, from October 1 thru April 30, the CONTRACTOR shall verify that the entire work area was left in a state that promotes surface drainage off and away from the area and from finished work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

CONTRACTOR shall not load, nor permit any part of any structure to be loaded, in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

5-12 WATER

CONTRACTOR shall develop a water supply as required for the Work. The COUNTY shall permit CONTRACTOR to use water obtained from an existing water storage reservoir designated on the plans. This water source is approximately six feet deep. The CONTRACTOR shall be responsible for all pumps, piping, and equipment necessary to obtain the water and use it for construction purposes.

No direct extractions from, or additions to, the groundwater shall be made unless approved by the ENGINEER.

5-13 DUST CONTROL

The CONTRACTOR shall be responsible for providing adequate dust control measures during the term of the Contract. Dust palliatives shall not be used without written authorization of the ENGINEER.

CONTRACTOR shall provide for dust control by spraying with water or other approved dust control product as necessary to the satisfaction of the ENGINEER during all work activities.

Dust control shall consist of furnishing water, required equipment, additives, accessories, and incidentals, and carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance, and to prevent dust originating from construction operations during the completion of the Contract, as required by the COUNTY/ENGINEER

No separate payment shall be made for any work performed or material used to control dust resulting from the CONTRACTOR's performance of the work, either inside or outside the right of way. Full compensation for such dust control shall be considered as included in the prices paid for the various items of work involved.

5-14 TRAFFIC CONTROL

Attention is directed to Sections 8-6, "Public Convenience," and 8-7, "Public Safety," of the General Provisions. Nothing in this section shall be construed as relieving the CONTRACTOR from his responsibility as provided in said Section 8-7.

No work that would require a lane closure shall be performed without the approval of the ENGINEER.

The CONTRACTOR shall submit to the COUNTY, for approval, a traffic plan. At a minimum, the traffic plan shall include the following:

1. Traffic flow pattern, including CONTRACTOR's equipment and landfill traffic flow patterns;
2. Alternate routes for CONTRACTOR's equipment and/or landfill traffic;
3. Times of day and schedule for traffic operations;

4. Locations of signs and traffic control devices and their types (if required); and Number and location of flag persons (if required).

5-15 DIFFERING SITE CONDITIONS

The CONTRACTOR shall promptly, and before the site is disturbed, notify the COUNTY in writing if the CONTRACTOR suspects or detects that the site contains:

- a) Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents.
- b) Unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

The COUNTY shall promptly investigate said conditions, and if the COUNTY finds that said conditions do materially differ from conditions indicated in the Contract Documents, the COUNTY shall issue a change order, increasing or decreasing Contract time or cost or both, as appropriate, as provided for in Section 10 of these specifications. If the CONTRACTOR is unable to perform or subcontract the work due, the COUNTY shall perform the work under separate contract.

In the event of a dispute, the CONTRACTOR shall not be excused from any completion date provided for in the Contract, but shall proceed with all work to be performed under the Contract. The CONTRACTOR shall retain any and all rights provided either by Contract or by law which pertains to the resolution of disputes and protests between the contracting parties.

5-16 QUALITY CONTROL

The CONTRACTOR is responsible for the quality of work performed under this Contract. The ENGINEER shall provide additional testing and inspection for quality control as required by the Technical Provisions and the Construction Quality Assurance (CQA) Plan. The CONTRACTOR must meet the requirements of the Technical Provisions and the CQA Plan to the satisfaction of the ENGINEER. The CONTRACTOR must meet all requirements of all manufacturer's warranties so as to maintain validity of the warranties. Neither the making nor the failure to inspect and test by the ENGINEER or the expressed or implied approval by the ENGINEER of any part of the Work shall relieve the CONTRACTOR of the responsibility to complete and guarantee the Work as specified.

References herein to materials testing apply to tests performed by an independent consultant, materials testing laboratory, or the COUNTY, at the COUNTY's expense.

5-17 STORM WATER POLLUTION PREVENTION

The CONTRACTOR shall comply with all requirements of the Storm Water Pollution Prevention Program(SWPPP) for the site, and implement a drainage and erosion control plan for the duration of the project. The CONTRACTOR shall determine necessary interim drainage measures required for the work area. The CONTRACTOR assumes all responsibility for protection of his work from damages due to storm water erosion, etc. for the duration of the project. All costs relative to compliance with the SWPPP as well as drainage and erosion control shall be included in the cost of the various items of work and no additional compensation shall

be made therefore. All fines imposed by regulating agencies related to compliance with the SWPPP are the responsibility of the CONTRACTOR. Copies of the SWPPP for the site are available through the Yolo County Central Landfill.

5-18 OTHER OBLIGATIONS AND RESPONSIBILITIES

Other CONTRACTOR's obligations and responsibilities shall be as set forth elsewhere in this General Provisions, or elsewhere in the Contract Documents.

SECTION 6 - CONTROL OF WORK, INSPECTIONS AND ACCEPTANCE OF WORK

6-1 AUTHORITY OF THE ENGINEER

The ENGINEER shall decide all questions as to the quality or acceptability of materials furnished and Work performed, as to the manner of performance and rate of progress of the Work, as to the interpretation of the Plans and Specifications, as to the acceptable fulfillment of the Contract on the part of the CONTRACTOR, and as to compensation. The ENGINEER's decision shall be final and shall include the authority to enforce and make effective such decisions and orders which the CONTRACTOR fails to carry out promptly.

6-1.1 FIELD ORDERS

At any time and from time to time during the course of the Work, the ENGINEER may, with respect to any part or parts of the Work, issue, in writing to CONTRACTOR, a Field Order. CONTRACTOR shall comply with the requirements of such Field Order forthwith or within such time as may be specified therein.

Field Orders will be used to order or delete Work, reject Work or note deficiencies, clarify Contract requirements or documents, or any other matters.

6-2 PLANS AND SHOP DRAWINGS

The Contract Plans furnished consist of general drawings and show such details as are necessary to give a comprehensive idea of the construction contemplated. All authorized alterations affecting the requirements and information given on the Contract Plans shall be in writing.

The Plans shall be supplemented by such Shop Drawings prepared by the CONTRACTOR as are necessary to adequately control the Work, as specified in Section 5-8, herein. No change shall be made by CONTRACTOR in any Shop Drawing after they have been approved by the ENGINEER.

Full compensation for furnishing all Shop Drawings shall be considered as included in the prices paid for the Contract items of Work to which such drawings relate, and no additional compensation will be allowed therefor.

6-2.1 TRENCH EXCAVATION SAFETY PLANS

Attention is directed to Section 8-5.1 "Trench Safety." Excavation for any trench five (5) feet or more in depth shall not begin until CONTRACTOR has received approval from the ENGINEER, of CONTRACTOR's detailed Plan for worker protection from the hazards of caving ground during the excavation of such trench. Such Plan shall be submitted at least five (5) days before CONTRACTOR intends to begin excavation for the trench and shall show the details of the design of shoring, bracing, sloping, or other provisions to be made for worker protection during such excavation. No such Plan shall allow the use of shoring, sloping, or a protective system less effective than that required by the Construction Safety Orders of the Division of Industrial Safety. If such Plan varies from the shoring system standards established by the Construction Safety Orders, the Plan shall be prepared and signed by an Engineer registered as a Civil or Structural Engineer in the State of California.

6-3 CONFORMITY WITH CONTRACT DOCUMENTS AND ALLOWABLE DEVIATIONS

Work and materials shall conform to the lines, grades, cross sections, dimensions and material requirements, including tolerances, shown on the Plans or indicated in the Specifications. Although measurement, sampling, and testing may be considered evidence of conformity, the ENGINEER shall be the sole judge of whether the Work or materials deviate from the plans and Specifications. The ENGINEER's decision shall be final as to any allowable deviations therefrom.

6-4 COORDINATION AND INTERPRETATION OF PLANS, STANDARD SPECIFICATIONS, AND TECHNICAL PROVISIONS

These Standard Specifications, the Standard Plans, Project Plans, Technical Provisions, Contract Change Orders, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary, and to describe and provide for a complete Work.

Where conflicts exist between these Specifications, the Plans, and/or any Reference Specifications, such conflicts shall be clarified according to the following order, the first ranked taking precedence over the lower ranked:

- Technical Provisions
- Project Plans
- Standard Plans
- Standard Specifications
- Referenced Specifications
- Approved Shop Drawings

Should it appear that the Work to be done, or any of the matters relative thereto, are not sufficiently detailed or explained in these Specifications, the Technical Provisions, or the Plans, CONTRACTOR shall apply to the ENGINEER for such further explanations as may be necessary. CONTRACTOR shall conform to any such further explanations as part of the Contract. In the event of any doubt or question arising respecting the true meaning of these Specifications, the Technical Provisions, or the Plans, reference shall be made to the ENGINEER whose decision thereon shall be final.

In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

6-5 ORDER OF WORK

When required by the Special Provisions or Plans, the CONTRACTOR shall follow the sequence of operations as set forth therein.

Full compensation for conforming to such requirements will be considered as included in the prices paid for the various Contract items of Work, and no additional compensation will be allowed therefor.

6-6 INSPECTION

The ENGINEER shall at all times have access to the Work during its construction, and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of these Specifications, the Technical Provisions, and the Plans. All Work done and all materials furnished shall be subject to the ENGINEER's inspection.

The inspection of the Work or materials shall not relieve CONTRACTOR of any obligations to fulfill the Contract as prescribed. Work and materials not meeting such requirements shall be made good. Unsuitable Work or materials may be rejected, notwithstanding that such Work or materials have been previously included in a progress estimate.

The Project shall be subject to inspection at all times by the State, Federal, or other appropriate agency.

CONTRACTOR shall give 24 hours' notice when an inspection is required. This notice shall be given at the office of the ENGINEER. Any Work constructed without inspection as provided above, except with the specific consent or approval of the ENGINEER, or constructed contrary to the instructions or orders of the ENGINEER or his authorized representative, must, if requested by the ENGINEER, be uncovered for examination and properly restored at the CONTRACTOR's expense.

Properly authorized inspectors shall be considered to be representatives of the ENGINEER. It will be their duty to inspect those portions of the Work to which they are assigned. An inspector shall have the authority to order the Work entrusted to his supervision stopped, if in his opinion such action becomes necessary, until the ENGINEER is notified and has determined and ordered that the Work may proceed in due fulfillment of all Contract requirements.

Re-examination of any Work may be ordered by the ENGINEER, and such Work must be uncovered by the CONTRACTOR. The CONTRACTOR shall pay the entire cost of such uncovering, re-examination, and replacement if the Work does not conform to the Plans and Specifications.

6-7 SUGGESTIONS TO CONTRACTOR ADOPTED AT OWN RISK

Any Plan or method of Work suggested by the ENGINEER to CONTRACTOR, but not specified or required, if adopted or followed by CONTRACTOR in whole or in part, shall be used at the risk and responsibility of CONTRACTOR, and the ENGINEER and the COUNTY shall assume no responsibility therefor.

6-8 REMOVAL OF REJECTED AND UNAUTHORIZED WORK

All Work which has been rejected shall be remedied, or removed, and replaced by CONTRACTOR in an acceptable manner without compensation for such removal, replacement, or remedial Work.

Any Work done beyond the lines and grades shown on the Plans, or as established by the ENGINEER, or any Extra Work done without written authority, will be considered as unauthorized Work and no payment will be made therefor.

Upon order of the ENGINEER, unauthorized Work shall be remedied, removed, or replaced at CONTRACTOR's expense.

Upon failure of CONTRACTOR to comply promptly with any order of the ENGINEER made under this Section, the COUNTY may cause rejected or unauthorized Work to be remedied, removed, or replaced, and to deduct the costs from any money due or to become due CONTRACTOR.

6-9 FINAL INSPECTION, FIELD ACCEPTANCE, AND ACCEPTANCE BY THE BOARD

The ENGINEER will not make the final inspection until the Work provided and contemplated by the Contract has been completed, including the satisfactory performance of all functional and operation testing, and the final cleaning up performed. CONTRACTOR shall notify the ENGINEER, in writing, of the completion of the Work, and the ENGINEER shall promptly inspect the Work. CONTRACTOR or his representative may be present at the inspection. Upon his inspection of the Work the ENGINEER shall notify CONTRACTOR, in writing, of any deficiencies to be remedied prior to final acceptance, by preparing a written list, commonly known in the industry as a Punch List.

CONTRACTOR shall remedy all items shown on the Punch List prior to final acceptance by the ENGINEER.

The ENGINEER is not authorized to amend the Contract by use of the Punch List. It is provided solely for the benefit of CONTRACTOR to enable determination of what items must be corrected before Field Acceptance Letter can be issued by the ENGINEER.

CONTRACTOR will be notified in writing of any defects or deficiencies to be remedied. Within ten (10) calendar days of receiving the Punch List, CONTRACTOR shall proceed to correct such defects or deficiencies. When notified that Work has been completed, the ENGINEER will again inspect the Work to satisfy himself that all Work has been done in accordance with the Contract Documents, and will issue a Field Acceptance Letter and will recommend to the Board that they formally accept the Contract.

The 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.

In the event that the Work still does not comply with the Contract Documents, the COUNTY reserves the right to issue such further Punch Lists as may be required, or to deduct from the final payment the cost of correction of any Work not completed in accordance with the contract Documents, but accepted by the COUNTY, without the issuance of further Punch Lists.

Field Acceptance by the ENGINEER shall cause the commencement of guarantee periods, but shall not bind the Board to formal acceptance, nor relieve CONTRACTOR from the responsibility of completing or correcting any Work. Within ten (10) days of acceptance by the Board, a Notice of Completion will be filed with the County Recorder of Yolo County.

SECTION 7 - CONTROL OF MATERIALS

7-1 SOURCE OF SUPPLY AND QUALITY OF MATERIALS

CONTRACTOR shall furnish all materials required to complete the Work, except materials that are designated in the Contract Documents to be furnished by the COUNTY, and materials furnished by the COUNTY in accordance with Section 10-4 "Force Account Payment."

Only materials conforming to the requirements of the Contract Documents shall be incorporated in the Work.

The materials furnished and used shall be new except as may be provided elsewhere in the Specifications, on the Plans, or in the Technical Provisions. The materials shall be manufactured, handled, and used in an expert manner to ensure completed Work in accordance with the Plans and Specifications.

Materials to be used in the Work will be subject to inspection and tests by the ENGINEER or designated representative. CONTRACTOR shall furnish, without charge, such samples as may be required. CONTRACTOR shall furnish the ENGINEER a list of his sources of materials and the locations at which such materials will be available for inspection. The ENGINEER may inspect, sample, or test materials at the source of supply or other locations. But such inspection, sampling, or testing will not be undertaken until the ENGINEER is assured by CONTRACTOR of the cooperation and assistance of both CONTRACTOR and the supplier of the material. CONTRACTOR shall assure that the ENGINEER or authorized representative has free access at all times to the material to be inspected, sampled, or tested. It is understood that such inspections and tests if made at any point other than the point of incorporation in the Work, in no way shall be considered as a guaranty of acceptance of such material, nor of continued acceptance of material presumed to be similar to that upon which inspections and tests have been made. Inspection and testing so performed shall not relieve CONTRACTOR or suppliers of responsibility for quality control.

Manufacturer's warranties, guaranties, instruction sheets, and parts lists which are furnished with certain articles or materials incorporated in the Work, shall be delivered to the ENGINEER before acceptance of the Contract.

Reports and records of inspections made, and tests performed, when available at the site of the Work, may be examined by CONTRACTOR.

7-2 COUNTY FURNISHED MATERIALS

Upon request of CONTRACTOR, materials furnished by the COUNTY will be made available to him within a reasonable time at the points designated in the Specific Conditions. They shall be loaded and hauled to the site of the Work by CONTRACTOR, at CONTRACTOR's expense. The cost of handling and placing all materials shall be considered as included in the Contract prices for the items in connection with which they are used.

CONTRACTOR will be held responsible for all received material, and deductions will be made from any money due CONTRACTOR to make good any shortages and deficiencies, from any cause whatsoever, which may occur after materials were received by CONTRACTOR.

7-3 STORAGE OF MATERIALS

Articles or materials to be incorporated in the Work shall be stored in such a manner as to ensure the preservation of their quality and fitness for the Work, and to facilitate inspection.

7-4 DEFECTIVE MATERIALS

All materials which the ENGINEER has determined do not conform to the requirements of the Plans and Specifications will be rejected whether in place or not. They shall be removed immediately from the site of the Work, unless otherwise permitted by the ENGINEER. No rejected materials, the defects of which have been subsequently corrected, shall be used in the Work unless approval, in writing, has been given by the ENGINEER. Upon failure of CONTRACTOR to comply promptly with any order of the ENGINEER made under the provisions in this Section 7-4, the ENGINEER shall have authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any money due or to become due CONTRACTOR.

7-5 TRADE NAMES AND ALTERNATIVES

For convenience in designation on the Plans or in the Specifications, certain articles or materials to be incorporated in the Work are designated under a trade name or the name of a manufacturer and his catalogue information. The use of an alternative article or material which is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

The burden of proof as to the quality and suitability of alternatives shall be upon CONTRACTOR who shall furnish all information necessary as required by the ENGINEER. The ENGINEER shall be the sole judge as to the quality and suitability of alternative articles or materials and shall make all final decisions. Whenever the Specifications permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of such substitute material will be made until the request for substitution is made in writing by the CONTRACTOR. Such written request shall be accompanied by complete data as to the equality of the material or article proposed. Such request shall be made in ample time to permit approval without delaying the Work.

7-6 PLANT INSPECTION

The ENGINEER may inspect the production of material, or the manufacture of products at the source of supply. Plant inspection, however, will not be undertaken until the ENGINEER is assured of the cooperation and assistance of both the CONTRACTOR and the material producer. The ENGINEER or an authorized representative shall have free entry at all times to such parts of the plant as concern the manufacture or production of the materials. Adequate facilities shall be furnished free of charge to make the necessary inspection. The COUNTY assumes no obligation to inspect materials at the source of supply.

7-7 CERTIFICATES OF COMPLIANCE

A Certificate of Compliance shall be furnished prior to the use of any materials for which these Specifications or the Technical Provisions require that such a certificate be furnished. In addition, when so authorized in these Specifications or in the Technical Provisions, the ENGINEER may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the Specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the Work and the lot so certified shall be clearly identified in the certificate.

All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve CONTRACTOR of responsibility for incorporating material in the Work which conforms to the requirement of the Plans and Specifications, and any such material not conforming to such requirements will be subject to rejection whether in place or not. The COUNTY reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

The form of the Certificate of Compliance and its disposition shall be as directed by the ENGINEER.

7-8 TESTING

Unless otherwise specified, all tests shall be performed in accordance with the methods used by the California Department of Transportation (CALTRANS) and shall be made by the ENGINEER or a designated representative.

CALTRANS has developed methods for testing the quality of materials and work. These methods are identified by number and are referred to in the Specifications as California Test. Copies of individual California Tests are available at the CALTRANS Transportation Laboratory, Sacramento, California.

Whenever a reference is made in the Specifications to a California Test by number, it shall mean the California Test in effect on the day the Notice to CONTRACTORS for the Work is dated.

Whenever the Specifications provide an option between two or more tests, the ENGINEER will determine the test to be used.

Whenever a reference is made in the Specifications to a specification, manual, or test designation either of the American Society for Testing and Materials, the American Association of State Highway and Transportation Officials, Federal Specifications, or any other recognized national organization, and the number or other identification representing the year of adoption or latest revision is omitted, it shall mean the specification, manual, or test designation in effect on the day the Notice of CONTRACTORS for the Work is dated. Whenever said specification, manual or test designation provides for test reports (such as certified mill test reports) from the manufacturer, copies of such reports, identified as to the lot of material, shall be furnished to the ENGINEER or CONTRACTOR. The manufacturer's test reports shall supplement the inspection, sampling, and testing provisions in this Section 7, "Control of Materials," and shall not constitute a waiver of the COUNTY's right to inspect. When material which cannot be identified with specific test reports in proposed for use, the ENGINEER may select random

samples from the lot for testing. Test specimens from the random samples, including those required for retest, shall be prepared in accordance with the referenced Specification and furnished and paid for by CONTRACTOR. The number of such samples and test specimens shall be entirely at the discretion of the ENGINEER.

When requested by the ENGINEER, CONTRACTOR shall furnish, without charge, samples of all materials entering into the Work, and no material shall be used prior to approval by the ENGINEER, except as provided in Section 7-7, "Certificates of Compliance."

The COUNTY will pay for all initial testing unless specified otherwise in the Contract Documents. In the event of failing tests, CONTRACTOR shall make arrangements for and pay the cost of subsequent retesting. Retests shall be made by the same company that performed initial testing. Type, location, and number of tests to be taken shall be determined by the ENGINEER.

SECTION 8 - LEGAL RELATIONS AND RESPONSIBILITY

8-1 LAWS TO BE OBSERVED

CONTRACTOR shall keep himself fully informed of all existing and future State and Federal laws, and COUNTY and municipal ordinances and regulations which in any manner affect those engaged or employed in the Work, or the materials used in the Work, or which in any way affect the conduct of the Work, and with all such orders and decrees of bodies or tribunals having any jurisdiction or authority over same.

CONTRACTOR shall at all times observe and comply with all existing laws, ordinances, regulations, orders, and decrees of bodies or tribunals having any jurisdictional authority over the Work; and shall cause all agents and employees of the CONTRACTOR to do the same. CONTRACTOR shall indemnify and hold harmless the County of Yolo, its officers, agents, and employees from any and all claims or liabilities, including, but not limited to, fines and penalties arising from, or based on the violation of any such law, ordinance, regulation, order, or decree, whether by CONTRACTOR or CONTRACTOR's agents and employees. If any discrepancy or inconsistency is discovered in the Plans, Drawings, Specifications, or Contract for the Work in relation to any such law, ordinance, regulation, order or decree, CONTRACTOR shall forthwith report the same to the ENGINEER in writing.

8-1.1 HOURS OF LABOR

Eight hours labor constitutes a legal day's work. CONTRACTOR shall forfeit, as a penalty to the County of Yolo, FIFTY (\$50) DOLLARS for each worker employed in the execution of the Contract, by the CONTRACTOR or any SUBCONTRACTOR, for each calendar day during which such worker is required, or permitted, to work more than eight (8) hours in any one calendar day, or more than forty (40) hours in any one calendar week, in violation of the provisions of the Labor Code of the State of California, and in particular, Section 1810 to Section 1815, thereof, inclusive. Work performed by employees of the CONTRACTOR in excess of eight (8) hours per day, and forty (40) hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay, as provided in said Section 1815.

8-1.2 PREVAILING WAGE

CONTRACTOR shall comply with Labor Code of the State of California Sections 1774 and 1775. In accordance with said Section 1775, CONTRACTOR shall forfeit as penalty to the County of Yolo, FIFTY (\$50) DOLLARS for each calendar day or portion thereof, for each worker paid less than the prevailing rates. The prevailing rates are determined by the Director of Industrial Relations of the State of California for such work or craft in which such worker is employed for any Work done under the Contract in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by CONTRACTOR.

Pursuant to the provisions of Section 1773 of the Labor Code of the State of California, the COUNTY has obtained the general prevailing rate of wages (which rate includes employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Section 1773.8 of said Code, apprenticeship, or other training programs

authorized by Section 3093 of said Code, and similar purposes) applicable to the Work to be done, for straight time, overtime, Saturday, Sunday, and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification, or type of worker concerned. These wage rates are set forth in the Department of Transportation, State of California, publication entitled General Prevailing Wage Rates, which is a part of the Contract.

The wage rates determined by the Director of Industrial Relations and published in the Department of Transportation publication entitled General Prevailing Wage Rate refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, said published rate of wage shall be in effect for the life of the Contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate, and the predetermined wage rate is on file with the Department of Industrial Relations, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to the Contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of the Contract, each successive predetermined wage rate shall apply to the Contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of the Contract, such wage rate shall apply to the balance of the Contract.

Pursuant to Section 1773.2 of the Labor Code, general prevailing wage rates set forth in the Department of Transportation publication entitled General Prevailing Wage Rates, which is a part of the Contract, shall be posted by CONTRACTOR at a prominent place at the site of the Work.

The COUNTY will not recognize any claim for additional compensation because of the payment by CONTRACTOR of any wage rate in excess of the prevailing wage rate set forth in the Contract. The possibility of wage increases is one of the elements to be considered by CONTRACTOR in determining a bid, and will not under any circumstances be considered as the basis of a claim against the COUNTY on the Contract.

8-1.3 PAYROLL RECORDS

CONTRACTOR's attention is directed to the provisions of Labor Code Sections 1776 and 1812. CONTRACTOR shall be responsible for compliance by SUBCONTRACTORS.

A copy of all payrolls shall be submitted weekly to the ENGINEER, upon request. Payrolls shall contain each employee's full name, address, social security number, correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions and actual wages paid. They shall also indicate apprentices and ratio of apprentices to journeymen. The employee's address and social security number need only appear on the first payroll on which the employee's name appears. The payroll shall be accompanied by a "Statement of Compliance" signed by the employer, or designated agent, indicating that the payrolls are correct and complete and that the wage rates contained therein are not less than those required by the Contract. The "Statement of Compliance" shall be on standard forms furnished by CONTRACTOR. CONTRACTOR shall be responsible for the submission of copies of payrolls of all SUBCONTRACTORS.

The penalties specified in subdivision (f) of Labor Code Section 1776 for noncompliance with the provisions of said Section 1776 may be deducted from any money due or which may become due to CONTRACTOR.

CONTRACTOR and each SUBCONTRACTOR shall preserve their payroll records for a period of three (3) years from the date of completion of the Contract.

8-1.4 LABOR NONDISCRIMINATION

Attention is directed to Section 1735 of the Labor Code of the State of California, which reads as follows:

"No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the Government Code, and every CONTRACTOR for public works violating this Section is subject to all the penalties imposed for a violation of this Chapter."

CONTRACTOR's attention is also directed to the requirements of the California Fair Employment and Housing Act (Government Code Sections 12900 et. seq.), to the regulations promulgated by the Fair Employment and Housing Commission to implement said Act, and to the nondiscrimination, affirmative action, and equal employment opportunity requirements in the Contract Documents.

8-1.5 APPRENTICES

CONTRACTOR's attention is directed to Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code and Title 8, California Administrative Code Section 200 et. seq. To ensure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio thereunder, each CONTRACTOR or SUBCONTRACTOR shall, where some question exists, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, or one of its branch offices prior to commencement of Work on the public works Contract. Responsibility for compliance with this Section lies with the Prime CONTRACTOR.

It is State policy to encourage the employment and training of apprentices on public works contracts as may be permitted under local apprenticeship standards.

8-1.6 WORKER'S COMPENSATION

Pursuant to the requirements of Section 1860 of the California Labor Code, CONTRACTOR will be required to secure the payment of Workers' Compensation to his employees in accordance with the provisions of Section 3700 of the Labor Code. Prior to the commencement of Work, CONTRACTOR shall sign and file with the ENGINEER a certification in the following form:

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

Said certification is included in the Contract, and signature and return of the Contract as provided in Section 3-2, "Execution of Contract," shall constitute signing and filing of the said certificate.

CONTRACTOR shall post, and cause all SUBCONTRACTORS to post, in a conspicuous place on the project site, a statement, as required by Labor Code Section 3550, stating the name of the workers' compensation insurance carrier or that the employer is self-insured, and who is responsible for claims adjustment. The notice shall also include advice as to the injured employee's right to receive medical care, to select or change the treating physician pursuant to the provisions of Labor Code Section 4600, and the right to receive temporary disability indemnity, permanent disability indemnity, vocational rehabilitation services, and death benefits, as appropriate.

CONTRACTOR and all SUBCONTRACTORS shall also give every new employee, either at the time the employee is hired or by the end of the first pay period, written notice of the information contained in Labor Code Section 3550.

8-1.7 CONTRACTOR'S LICENSING LAWS

Attention is directed to the provisions of Chapter 9 of Division 3, of the Business and Professions Code concerning the licensing of CONTRACTORS. All bidders and CONTRACTORS shall be licensed in accordance with the laws of the State of California and any bidder or CONTRACTOR not so licensed is subject to the penalties imposed by such laws.

8-2 PAYMENT OF TAXES

The Contract prices paid for the Work shall include full compensation for all taxes which the CONTRACTOR is required to pay, whether imposed by Federal, State, or local government, including, without being limited to, State Sales Tax and Federal Excise Tax.

8-3 PERMITS AND LICENSES

CONTRACTOR shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the Work.

The Environmental Quality Act of 1970 (Chap. 1433, Stats. 1970, as amended by Chapter 1154, Stats. 1972), may be applicable to permits, licenses, and other authorizations which the CONTRACTOR must obtain from the COUNTY in connection with performing the Work of the Contract. The CONTRACTOR shall comply with the provisions of said statutes in obtaining such permits, licenses, and other authorizations and they shall be obtained in sufficient time to prevent delays to the Work.

In the event that the COUNTY has obtained permits, licenses, or other authorizations, applicable to the Work, in conformance with the requirements in said Environmental Quality Act of 1970, the CONTRACTOR shall comply with the provisions of said permits, licenses, and other authorizations.

8-4 PATENTS

CONTRACTOR shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on, or incorporated in, the Work, and agrees to indemnify and save harmless the County of Yolo, the Yolo County Board of Supervisors, the ENGINEER and their duly authorized representatives, from all suits at law or actions of every nature for, or on account of, the use of any patented materials, equipment, devices, or processes.

8-5 SAFETY AND HEALTH PROVISIONS

CONTRACTOR shall conform to all applicable occupational safety and health standards, rules, regulations, and orders established by the State of California. Local emergency phone numbers (police, fire, ambulance, hospital) shall be posted on the job site in a conspicuous location.

8-5.1 TRENCH SAFETY

CONTRACTOR shall comply with all applicable laws, ordinances, and regulations relating to Trench Safety. CONTRACTOR shall at all times maintain suitable barricades, warning devices, trench shoring, bracing, and covers, and other protective measures as deemed appropriate by the ENGINEER, which measures shall provide only the highest suitable level of protection to all workers, inspectors, and the general public. Attention is directed to the provisions of Section 8-6, "Public Convenience," Section 8-7, "Public Safety," and Section 8-9, "Preservation of Property."

CONTRACTOR's attention is directed to the provisions of Section 6705 of the Labor Code concerning Trench Excavation Safety Plans, and to herein Section 6-2.1, "Trench Excavation Safety Plans."

8-5.2 SOUND CONTROL REQUIREMENTS

CONTRACTOR shall comply with all local sound control and noise level rules, regulations, and ordinances which apply to any Work performed pursuant to the Contract.

Each internal combustion engine used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

8-5.3 WEIGHT LIMITATIONS

Unless expressly permitted in the Contract Documents, CONTRACTOR shall not operate construction equipment or vehicles of any kind which, laden or unladen, exceed the maximum weight limits set forth in Division 15 of the Vehicle Code, over completed or existing treated base, surfacing, pavement, or structures in any area within the limits of the project.

8-6 PUBLIC CONVENIENCE

This Section defines the CONTRACTOR's responsibility with regard to convenience of the public and public traffic in connection with construction operations.

CONTRACTOR's attention is directed to Section 8-7, "Public Safety" for provisions relating to the CONTRACTOR's responsibility for the safety of the public. The requirements in said

Section 8-7 are in addition to the requirements of this Section 8-6, and CONTRACTOR will not be relieved of any responsibilities as set forth in said Section 8-7 by reason of conformance with any of the provisions in this Section 8-6.

In the event of a suspension of the Work, attention is directed to Section 9-3, "Temporary Suspension of Work."

CONTRACTOR shall conduct operations so as to offer the least possible obstruction and inconvenience to the public. CONTRACTOR shall have under construction no greater length or amount of Work than can be prosecuted properly with due regard to the rights of the public.

Unless otherwise provided in the Contract Documents, all public and landfill traffic shall be permitted to pass through the Work with as little inconvenience and delay as possible. Where possible, such traffic shall be routed on new or existing paved surfaces.

Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately by CONTRACTOR at CONTRACTOR's expense.

Existing traffic signal and street lighting systems shall be kept in operation for the benefit of the traveling public during progress of the Work. Other forces will continue routine maintenance of existing systems.

Construction operations shall be conducted in such a manner so as to cause as little inconvenience as possible to abutting property owners.

Convenient access to driveways, houses, and buildings along the line of Work shall be maintained. When the abutting property owner's access across the right-of-way line is to be eliminated, or to be replaced under the Contract by other access facilities, the existing access shall not be closed until the replacement access facilities are usable.

Water and dust palliative shall be applied if ordered by the ENGINEER for the alleviation or prevention of dust nuisance. No separate payment will be made for any Work performed, or material used, to control dust resulting from CONTRACTOR's performance of the Work, or caused by public traffic, either inside or outside the right-of-way. Full compensation for such dust control will be considered as included in the prices paid for the various items of Work involved.

In order to expedite the passage of public traffic through or around the Work, and where ordered by the ENGINEER, CONTRACTOR shall install and maintain in good condition, signs, lights, flares, temporary railing (Type K), barricades, and other facilities for the sole convenience and direction of public traffic. Also, where directed by the ENGINEER, CONTRACTOR shall furnish competent flaggers whose sole duties shall consist of directing the movement of public traffic through or around the Work.

Should CONTRACTOR fail to install or maintain traffic control devices required by the ENGINEER or the Contract Documents, the ENGINEER may cause such installation or maintenance by other forces and shall deduct the cost thereof from money due, or to become due, CONTRACTOR under the Contract.

Whenever a section of surfacing or pavement has been completed, CONTRACTOR shall open it to use by public traffic if the ENGINEER so orders, or may open it to use by public traffic if the ENGINEER so consents. In either case, CONTRACTOR will not be allowed any compensation due to any delay, hindrance, or inconvenience to operations caused by such public traffic, but will thereupon be relieved of responsibility for damage to the Work caused by public traffic within

the limits of such use. CONTRACTOR will not be relieved of cleanup and finishing operations, or of any other responsibility under the Contract.

Except as otherwise provided in this Section 8-6 or in the Contract Documents, full compensation for conforming to the requirements in this Section 8-6 and in the Contract Documents shall be considered as included in the prices paid for the various Contract items of Work, and no additional compensation will be allowed therefor.

8-7 PUBLIC SAFETY

It is CONTRACTOR's responsibility to provide for the safety of traffic and the public during construction.

CONTRACTOR's attention is directed to Section 8-10, "Responsibility for Damage." Attention is also directed to Section 8-6, "Public Convenience," for provisions relating to the CONTRACTOR's responsibility for providing for the convenience of the public in connection with operations required to complete Work under the Contract.

When CONTRACTOR's operations create a condition hazardous to traffic or to the public, CONTRACTOR shall furnish, erect, and maintain such fences, temporary railing (Type K), barricades, lights, signs, and other devices, and take such other protective measures as are necessary to prevent accidents or damage or injury to the public. CONTRACTOR shall also furnish such flaggers as are necessary to give adequate warning to traffic or to the public of any dangerous conditions to be encountered. All such measures shall be performed at CONTRACTOR's sole expense and without cost to the COUNTY.

Signs, lights, flags, and other warning and safety devices and their use shall conform to the requirements set forth in the current "MANUAL OF TRAFFIC CONTROLS - Warning Signs, Lights and Devices for Use in Performance of Work Upon Highways," published by the Department of Transportation, State of California.

No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic. At the end of each day's Work and at other times when construction operations are suspended for any reason, CONTRACTOR shall remove all equipment and other obstructions from that portion of the roadway for use by public traffic.

Should CONTRACTOR appear to be neglectful or negligent in furnishing warning devices and taking protective measures as above provided, the ENGINEER may direct attention to the existence of a hazard, and the necessary warning devices shall be furnished and installed, and protective measures taken by CONTRACTOR at CONTRACTOR's expense. Should the ENGINEER point out the inadequacy of warning devices and protective measures, such action on the part of the ENGINEER shall not relieve CONTRACTOR from responsibility for public safety or abrogate obligation to furnish and pay for these devices and measures.

Except as otherwise provided in the Contract Documents, full compensation for conforming to all of the provisions in this Section 8-7, and in the Contract Documents, shall be considered as included in the prices paid for the various Contract items of Work, and no additional compensation will be allowed therefor.

8-8 USE OF EXPLOSIVES

The use of explosives is not allowed unless otherwise provided in the Contract Documents.

8-9 PRESERVATION OF PROPERTY

CONTRACTOR's attention is directed to Section 8-10, "Responsibility for Damage." Due care shall be exercised to avoid injury to existing highway improvements or facilities, utility facilities, adjacent property, and roadside trees, shrubs, and other plants that are not to be removed.

Trees, shrubs, and other plants that are not to be removed, pole lines, fences, signs, markers and monuments, buildings and structures, conduits, pipelines under or above ground, sewer and water lines, all street facilities, and any other improvements or facilities within or adjacent to the Work, shall be protected from injury or damage. If ordered by the ENGINEER, CONTRACTOR shall provide and install suitable safeguards, approved by the ENGINEER, to protect such objects from injury or damage. If such objects are injured or damaged by reason of CONTRACTOR's operations, they shall be replaced or restored at CONTRACTOR's expense. The facilities shall be replaced or restored to a condition as good as when CONTRACTOR entered upon the Work, or as good as required by the Specifications accompanying the Contract, if any such objects are a part of the Work being performed under the Contract. The ENGINEER may make or cause to be made such temporary repairs as are necessary to restore to service any damaged highway facility. The cost of such repairs shall be borne by CONTRACTOR and may be deducted from any money due or, to become due, CONTRACTOR under the Contract.

The CONTRACTOR's attention is also directed to the Site Plan which indicates the locations of existing observation wells, extraction wells, survey monuments, paved roads, groundwater monitoring wells on the project site, LCRS clean-outs, and leachate pipes, which are to be protected from damage. Existing roads used as haul roads shall be returned to their original condition, as approved by the ENGINEER.

The CONTRACTOR shall be responsible for the repair or replacement of any existing facilities and equipment damaged by the CONTRACTOR's personnel, equipment, sub-CONTRACTORS, or material suppliers.

The CONTRACTOR is advised that the construction of this project may entail working adjacent to buried wastes and landfill leachate from the adjacent modules. As buried organic materials decompose anaerobically, they generate landfill gas (LFG). This LFG (or biogas) normally consists of about 45 percent carbon dioxide (CO₂), 55 percent methane (CH₄), and other gases dependent on the composition of the buried materials. Occasionally hydrogen sulfide (H₂S) or other toxic gases have been encountered at some landfills, even though the sites were not classified as hazardous waste disposal sites.

The landfill is permitted by the state and operated as a Class III landfill which allows for the disposal of "nonhazardous solid waste" as defined in Title 23 of the California Administrative Code. The leachate holding ponds are permitted by the state and operated as Class II surface impoundments which allows for the disposal of "liquid designated waste" as defined in Title 27 of the California Administrative Code.

Notwithstanding the above, the COUNTY cannot guarantee that toxic or hazardous materials or vapors shall not be encountered by the CONTRACTOR during the performance of this project.

CONTRACTOR's attention is also directed to the possible existence of underground main or trunk line facilities not indicated on the Plans or in the Technical Provisions, and to the possibility that underground main or trunk lines may be in a location different from that which is indicated on the Plans or in the Technical Provisions. CONTRACTOR shall ascertain the exact location of underground main or trunk lines whose presence is indicated on the Plans or in the

Technical Provisions, and the location of their service laterals or other appurtenances, and of existing service laterals or appurtenances of any other underground facilities which can be inferred from the presence of visible facilities such as buildings, meters, and junction boxes. This determination shall be made prior to doing Work that may damage any of such facilities or interfere with their service.

CONTRACTOR shall immediately notify the ENGINEER of any delays to operations which are a direct result of underground main or trunk line facilities which were not indicated on the Plans or in the Technical Provisions, or were located in a position substantially different from that indicated on the Plans or in the Technical Provisions. Such delays will be considered right-of-way delays within the meaning of Section 9-7, "Right-of-Way Delays," and compensation for such delay will be determined in accordance with said Section 9-7. CONTRACTOR shall be entitled to no other compensation for any such delay.

Except as provided above, full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in protecting or repairing property as specified in this Section 8-9, shall be considered as included in the prices paid for the various Contract items of Work and no additional compensation will be allowed therefor.

8-10 RESPONSIBILITY FOR DAMAGE

CONTRACTOR shall defend, indemnify, and save harmless the COUNTY and all its officers, agents, and employees from any and all claims, demands, damages, costs, expenses or liability occasioned by the performance or attempted performance of the provisions hereof, or in any way arising out of the Contract, including, but not limited to, inverse condemnation, equitable relief, any wrongful act, or any negligent act or omission to act on the part of CONTRACTOR or any of its agents, employees, independent CONTRACTORS or SUBCONTRACTORS; provided, further, that the foregoing shall apply to any wrongful acts, or any actively or passively negligent acts or omissions to act, committed jointly or concurrently by CONTRACTOR, CONTRACTOR's agents, employees, or independent CONTRACTORS or SUBCONTRACTORS, and the COUNTY, its agents, employees, or independent CONTRACTORS.

Such indemnity obligation expressly extends to, and includes, any and all claims, demands, damages, costs, expenses, or liability occasioned as a result of damages to adjacent property caused by the conduct of the Work.

Such indemnity obligation expressly extends to and includes any and all claims, demands, damages, costs, expenses, or liability occasioned as a result of the violation by the CONTRACTOR, the CONTRACTOR's agents, employees, or independent CONTRACTORS or SUBCONTRACTORS, of any provisions of Federal or State law, including, but not limited to fines or penalties.

Such indemnity obligation also expressly extends to and includes any claims, demands, damages, costs, expenses, or liability occasioned by injury to or death of any person, or any property damage to property owned by any person while on or about the premises of the Work, or as a result of the Work, whether such persons are on or about the premises by right or not, whenever the Work is alleged to have been a contributing cause in any degree whatsoever,

Nothing contained in the foregoing indemnity provisions shall be construed to require the CONTRACTOR to indemnify the COUNTY in contravention of Section 2782 of the Civil Code.

In providing any defense under this Section, CONTRACTOR shall use counsel reasonably acceptable to the County Counsel.

8-11 INSURANCE REQUIREMENTS

CONTRACTOR shall obtain at CONTRACTOR's sole cost and expense, all insurance required by Contract Agreement. Certificates of insurance and copies of the insurance policies shall be delivered to the COUNTY prior to execution of the Contract and before any Work is commenced. No payment will be made to the CONTRACTOR unless current insurance certificates are on file with the COUNTY at the time of the payment.

CONTRACTOR shall include all SUBCONTRACTORS as insured under its policies or shall furnish separate certificates and endorsements for each SUBCONTRACTOR. All coverages for SUBCONTRACTORS shall be subject to all the requirements stated herein.

8-12 LEGAL ACTIONS AGAINST THE COUNTY

In the event litigation is brought against the COUNTY concerning the compliance of the COUNTY with State or Federal laws, rules or regulations, or other applicable rules, regulations, or ordinances, the provisions of this Section shall apply.

- A. If, pursuant to court order, the COUNTY prohibits CONTRACTOR from performing all or any portion of the Work, the delay will be considered a delay within the meaning of Section 9-7, "Right-of-Way Delays," unless the contract is terminated as hereinafter provided.
- B. If, pursuant to court order (other than an order to show cause) the COUNTY is prohibited from requiring CONTRACTOR to perform all or any portion of the Work, the COUNTY may, if it so elects, eliminate the enjoined Work pursuant to Section 4-3, "Changes," or terminate the Contract.
- C. If the final judgment in the action prohibits the COUNTY from requiring CONTRACTOR to perform all or any portion of the Work, the COUNTY will either eliminate the enjoined Work pursuant to Section 4-3, "Changes," or terminate the Contract.
- D. If the Contract is to be terminated, the termination and the determination of the total compensation payable to the CONTRACTOR, shall be governed by the provisions of Section 9-8, "Termination of Contract."

8-13 DISPOSAL OF MATERIAL

CONTRACTOR may, at his option, dispose of any waste materials generated from this project, that are regularly accepted at the landfill, except hazardous materials, on site at a location directed by ENGINEER. All disposed materials shall be weighed before disposal at the YCCL scale house. CONTRACTOR must transport the materials in a vehicle approved by ENGINEER. The normal fee charged for disposal of said materials shall be waived by the COUNTY.

Full compensation for all costs involved in disposing of materials as specified in this Section 8-13, including all costs of hauling, shall be considered as included in the price paid for the Contract item of Work involving such materials and no additional compensation will be allowed therefor.

8-14 COOPERATION

Should construction be under way by other forces or by other CONTRACTORS within or adjacent to the limits of the Work specified, or should Work of any other nature be under way by other forces within or adjacent to said limits, CONTRACTOR shall cooperate with all such other CONTRACTORS or other forces to the end that any delay or hindrance to their work will be avoided. The right is reserved to perform other or additional Work at or near the site (including material sources) at any time, by the use of other forces.

CONTRACTOR is advised that the COUNTY has ongoing landfilling and material recycling operations. The CONTRACTOR is fully responsible for coordinating construction activities with other on-site operations. No provisions for schedule or cost adjustments shall be provided due to alleged delays or other alleged impacts arising from on-site operations activities.

The authorized representatives of the following agencies shall also have the right of access to inspect the work covered by these Contract Documents during the performance of this Contract:

1. Regional Water Quality Control Board, Central Valley Region
2. Yolo/Solano County Air Pollution Control District
3. California Department of Resources, Recycling and Recovery
4. Yolo County Environmental Health Department
5. Other local, state, and federal agencies

These inspections shall be performed in the presence of the COUNTY. Reasonable facilities for the proper handling and inspection of the materials and work shall be furnished by the CONTRACTOR.

8-15 RELIEF FROM MAINTENANCE AND RESPONSIBILITY

Upon the request of CONTRACTOR, the ENGINEER may relieve CONTRACTOR of the duty of maintaining and protecting certain portions of the Work which have been completed in all respects, in accordance with the requirements of the Contract, and to the satisfaction of the ENGINEER, and thereafter, except with consent, CONTRACTOR will not be required to do further Work thereon. In addition, such action by the ENGINEER will relieve CONTRACTOR of responsibility for injury or damage to said completed portions of the Work resulting from use by public traffic, or from the action of the elements, or from any other cause but not from injury or damage resulting from CONTRACTOR's own operations or negligence. However, nothing in this Section 8-15 providing for relief from maintenance and responsibility, will be construed as relieving CONTRACTOR of full responsibility for making good defective Work or materials found at any time before the formal written acceptance of the entire Contract by the COUNTY.

8-16 CONTRACTOR'S RESPONSIBILITY FOR THE WORK AND MATERIALS

Until the acceptance of the Contract by the Board of Supervisors, CONTRACTOR shall have the charge and care of the Work and of the materials to be used therein (including materials for which partial payment has been made, or materials which have been furnished by the COUNTY), and shall bear the risk of injury, loss, or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the Work, except as provided in Section 8-6, "Public Convenience," and Section 8-15, "Relief from Maintenance and Responsibility."

CONTRACTOR shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the materials occasioned by any cause before its completion and acceptance, and shall bear the expense thereof. Where necessary to protect the Work or materials from damage, the CONTRACTOR shall provide suitable drainage of any roadway and erect such temporary structures as are necessary to protect the Work or materials from damage at no expense to the COUNTY. The suspension of the Work from any cause whatever shall not relieve CONTRACTOR of responsibility for the Work and materials as herein specified.

8-17 PROPERTY RIGHTS IN MATERIALS

Nothing in the Contract shall be construed as vesting in CONTRACTOR any right of property in the materials used after they have been attached or affixed to the Work or soil. All such material shall become the property of the County of Yolo.

8-18 PERSONAL LIABILITY

Neither the Yolo County Board of Supervisors, the Director, the ENGINEER, nor any other officer or authorized employee of the COUNTY, shall be personally responsible for any liability arising under, or by virtue of, the Contract.

SECTION 9 - PROSECUTION AND PROGRESS

9-1 BEGINNING OF WORK

After the Contract has been executed, the COUNTY will issue to CONTRACTOR a written Notice to Proceed stating the first working day of the Contract. CONTRACTOR shall diligently prosecute the Contract to completion within the specified time limit.

Should CONTRACTOR begin Work in advance of receiving notice that the Contract has been approved as above provided, any Work performed in advance of the said date of approval shall be considered as having been done at CONTRACTOR's own risk and as a volunteer unless said Contract is so approved.

The delivery of the Contract to the COUNTY, for execution and approval, properly executed on behalf of the CONTRACTOR and surety shall constitute CONTRACTOR's authority to enter upon the site of the Work and to begin operations, subject to assuming the risk of the disapproval of the Contract, as above provided, and subject also to the following:

- A. Notice in writing of CONTRACTOR's intention to start Work prior to approval, specifying the intended start date, shall be given to the COUNTY at least twenty-four (24) hours in advance; and
- B. CONTRACTOR shall, on commencing operations, take all precautions required for public safety and shall observe all provisions of the Contract; and
- C. All Work performed according to the Contract prior to its approval under the authorization hereof, will, when the Contract is approved, be considered authorized Work and will be paid for as provided in the Contract.

The CONTRACTOR shall be required to commence work under this Contract within 7 calendar days after the date of receipt by the CONTRACTOR of Notice to Proceed. In addition to commencing work within 7 calendar days, the CONTRACTOR shall furnish within 15 calendar days after receiving Notice to Proceed to the ENGINEER a statement(s) from the vendor(s) that the order for the materials and equipment required for this contract has been received and accepted by said vendor(s).

9-2 PROGRESS SCHEDULE

CONTRACTOR shall submit to the ENGINEER a practicable Progress Schedule within ten (10) working days of approval of the Contract. Additionally, an updated schedule shall be provided by the CONTRACTOR at each weekly progress meeting and within ten (10) working days of the ENGINEER's written request at any other time.

The schedule shall show the order in which the CONTRACTOR proposes to carry out the Work, the dates on which all salient features of the Work will be started (including procurement of materials, plant, and equipment), and the contemplated dates for completing the said salient features, and indicating the approximate percentage of Work scheduled for completion at any time. The form, degree of detail, and frequency of updating the schedule shall be as instructed by the ENGINEER.

The Progress Schedules submitted shall be consistent in all respects with the time and order of Work requirements of the Contract. The order of the Work shall be in a logical sequence submitted for approval by the ENGINEER prior to the start of work.

Project schedules will include at a minimum, the following:

1. Contract approval date
2. Procurement of geosynthetics and special order items
3. Planned and actual start and completion date of each work activity
4. Each bid item will be considered a work activity
5. Subtasks associated with each work activity, ie. Survey, watering, track walking, etc.
6. Final cleanup

Project schedules that are accepted by the ENGINEER, will be paid for in the progress pay estimate after the scheduled week, at the contract unit price per the bid schedule.

Subsequent to the time that submittal of a Progress Schedule is required in accordance with these Specifications, no progress payments will be made for any Work until a satisfactory schedule has been submitted to the ENGINEER.

Despite the filing of a Progress Schedule, CONTRACTOR shall be governed by the direction of the ENGINEER in respect to specific programming when, in the judgment of the ENGINEER, it becomes necessary to accelerate the Work or any part thereof, or cease Work at any particular point and concentrate his forces at such other point or points, to the intent that all avoidable delays may be obviated.

9-3 TEMPORARY SUSPENSION OF WORK

The ENGINEER shall have the authority to suspend the Work wholly or in part, for such period as deemed necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the Work, or for such time as deemed necessary due to the failure on the part of the CONTRACTOR to carry out orders given, or to perform any provision of the Contract. CONTRACTOR shall immediately comply with the written order of the ENGINEER to suspend the Work wholly or in part. The suspended Work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the ENGINEER.

In the event that a suspension of Work is ordered as provided above, and should such suspension be ordered because CONTRACTOR failed to carry out orders or to perform any provision of the Contract; or because weather conditions are unsuitable for performing any item or items of Work which the ENGINEER judges could have been performed prior to such unsuitable weather had CONTRACTOR diligently prosecuted the Work when weather was suitable; CONTRACTOR, at CONTRACTOR's expense, shall do all the Work necessary to provide a safe, smooth, and unobstructed passageway through the Construction Area for use by public traffic, landfill customers, and COUNTY employees and CONTRACTORS during the period of such suspension, as provided in Sections 8-6, "Public Convenience," and 8-7, "Public Safety," and as specified in the Technical Provisions for the Work. In the event that

CONTRACTOR fails to perform the Work above specified, the COUNTY will perform such Work and the cost thereof will be deducted from money due or to become due CONTRACTOR.

In the event of a suspension of Work under any of the conditions set forth in this Section 9-3, such suspension of Work shall not relieve the CONTRACTOR of responsibilities specified in Section 8, "Legal Relations and Responsibility."

9-4 TIME OF COMPLETION

The CONTRACTOR shall diligently prosecute the Work required under the Contract Documents to completion within **30 Working Days** after the commencement of the Work.

If any portion of a day is a legal holiday, the entire day will be considered as a non-working day within the meaning of this Section 9-4.

Should CONTRACTOR prepare to begin Work at the regular starting time of any day on which inclement weather, or the conditions resulting from the weather, or the condition of the Work, prevents the Work from beginning at the usual starting time, and the crew is dismissed as a result thereof, and CONTRACTOR does not proceed with at least 75 percent of the normal labor and equipment force engaged in the current controlling operation, or operations, for at least 60 percent of the total daily time being currently spent on the controlling operation or operations, the CONTRACTOR will not be charged for a working day whether or not conditions should change thereafter during said day, and the major portion of the day could be considered to be suitable for such construction operations.

The current controlling operation or operations are to be construed to include any feature of the Work considered at the time by the ENGINEER and the CONTRACTOR, which, if delayed, will delay the time of completion of the Contract.

Determination that a day is a non-working day by reason of inclement weather or conditions resulting immediately therefrom shall be made and agreed upon during such day by conference between the ENGINEER and CONTRACTOR. In the event of failure to agree, CONTRACTOR will be allowed 15 days from the issuance of the Weekly Statement of Working Days in which to file a written protest setting forth in what respects CONTRACTOR differs from the ENGINEER; otherwise, the decision of the ENGINEER shall be deemed to have been accepted by CONTRACTOR as correct. The ENGINEER will furnish CONTRACTOR a Weekly Statement showing the number of working days charged to the Contract for the preceding week, the number of working days of time extensions being considered or approved, the number of working days originally specified for the completion of the Contract, and the number of working days remaining to complete the Contract and the extended date for completion thereof, except when working days are not being charged in accordance with the provisions in Section 9-3, "Temporary Suspension of Work."

9-5 LIQUIDATED DAMAGES

If the Work required under the Contract Documents is not finished or completed within the time specified in Section 9-4, taking into consideration any period of delay authorized by the ENGINEER or pursuant to a duly authorized Contract Change Order, the CONTRACTOR shall pay to the COUNTY, as fixed and liquidated damages and not as penalty, the sum of five thousand (\$5,000) dollars per day for each and every calendar day's delay in finishing the Work in excess of the numbers of days prescribed. In addition to the above described liquidated damages, CONTRACTOR agrees to reimburse COUNTY for any fines or penalties issued by

regulatory agencies should the CONTRACTOR fail to complete the Work within the allowed number of working days.

CONTRACTOR shall pay County \$5,000 per event as liquidated damages for causing the County to cancel and/or reschedule a Household Hazardous Waste (HHW) or Small Quantity Conditionally Exempt Generator (SQCEG) Collection Event. CONTRACTOR acknowledges that the County is required to hold these events, which are scheduled a year in advance, and that, fixing actual damages caused by canceling and/or rescheduling the event would be extremely difficult or impractical, and that, consequently, the liquidated damages set forth in this subsection are not manifestly unreasonable under the circumstances existing on the effective date of this Agreement. CONTRACTOR also acknowledges that the liquidated damages are in addition to reimbursing the County for any fines or actual damages resulting from canceling or rescheduling an event.

CONTRACTOR shall pay County \$3,000 per hour, up to \$30,000 per day, as liquidated damages for each hour that the CONTRACTOR's work impedes or obstructs the operation of the landfill such that it does not allow customer access, and/or causes unsafe conditions for landfill staff, CONTRACTORS' personnel or the public, including but not limited to traffic backing up or the inability for staff or the public to safely access and operate or use site facilities. CONTRACTOR acknowledges it is very important to the County that normal daily operations continue at the landfill during project construction, that fixing actual damages caused by impeding, restricting or disrupting normal landfill operations would be extremely difficult or impractical, and that, consequently, the liquidated damages set forth in this subsection are not manifestly unreasonable under the circumstances existing on the effective date of this Agreement.

If the Work required under this Contract is not finished or completed within the number of days specified in the Contract Documents, or within any period of delay authorized by the ENGINEER, or pursuant to a duly authorized Contract Change Order, CONTRACTOR acknowledges and admits that damage will be sustained by the COUNTY. It is also agreed that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the COUNTY will sustain in the event of and by reason of such delay. It is therefore agreed by the parties of this Contract, that CONTRACTOR will pay to the COUNTY, as fixed and liquidated damages and not as penalty, the sum set forth in this Section per day for each and every day's delay in finishing the Work in excess of the number of days prescribed. The CONTRACTOR agrees to pay said liquidated damages herein provided for. CONTRACTOR further agrees that the COUNTY may deduct the amount thereof from any money due or that may become due CONTRACTOR under the Contract. Both the CONTRACTOR and the CONTRACTOR's surety shall be liable for the total amount of liquidated damages.

It is further agreed that in case the Work called for under the Contract is not finished and completed in all parts and requirements within the number of working days specified, the ENGINEER shall have the right to increase the number of working days or not, as he may deem best to serve the interest of the COUNTY. If he decides to increase the said number of working days, he shall further have the right to charge to CONTRACTOR, his heirs, assigns, or sureties and to deduct from the final payment for the Work, all or any part, as he may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the Contract, and which accrue during the period of such extension. The cost of final surveys and preparation of the final estimate shall not be included in such charges,

CONTRACTOR will be granted an extension of time and will not be assessed with liquidated damages or the cost of engineering and inspection for any portion of the delay in completion of the Work beyond the time named in the Contract Documents for the completion of the Work caused by: acts of God or of the public enemy, fire, floods, tidal waves, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes, shortage of materials, and freight embargoes; provided, that CONTRACTOR shall notify the ENGINEER in writing of the causes of delay within 15 days from the beginning of any such delay. The ENGINEER shall ascertain the facts and the extent of the delay, and his findings thereon shall be final and conclusive.

No extension of time will be granted for a delay caused by a shortage of materials unless CONTRACTOR furnishes to the ENGINEER documentary proof that every effort has been made to obtain such materials, from all known sources within reasonable reach of the Work, in a diligent and timely manner, and further proof in the form of Supplementary Progress Schedules, as required in Section 9-2, "Progress Schedule," that the inability to obtain such materials when originally planned, did in fact cause a delay in final completion of the entire Work, which delay could not be compensated for by revising the sequence of the CONTRACTOR's operations. The term "shortage of materials," as used in this Section, shall apply only to materials, articles, parts, or equipment which are standard items and are to be incorporated in the Work. The term "shortage of materials," shall not apply to materials, parts, articles, or equipment which are processed, made, constructed, fabricated, or manufactured to meet the specific requirements of the Contract. Only the physical shortage of material will be considered under these provisions as a cause for extension of time. Delays in obtaining materials due to priority in filling orders will not constitute a shortage of materials.

Except for the additional compensation provided for in Section 9-7, "Right-of-Way Delays," and except as provided in Public Contract Code Section 7102, CONTRACTOR shall have no claim for damage or compensation for any delay or hindrance.

It is the intent of the above provisions that CONTRACTOR shall not be relieved of liability for liquidated damages, or engineering and inspection charges, for any period of delay in completion of the Work in excess of that expressly provided for in this Section 9-5.

Payment by the COUNTY of any progress payments, after the specified date of completion, shall not constitute a waiver by the COUNTY of its right to claim liquidated damages in accordance with this Section.

9-6 TERMINATION OF CONTROL

The Contract may be cancelled by the COUNTY without liability for damage, when in the opinion of the COUNTY, CONTRACTOR is not complying in good faith, has become insolvent, or has assigned or subcontracted any part of the Work without the COUNTY's consent. In the event of such cancellation, CONTRACTOR will be paid the actual amount due based on unit prices or lump sums bid for the quantity of work completed at the time of cancellation, less damages caused to the COUNTY by acts of CONTRACTOR causing the cancellation. CONTRACTOR, in having tendered a bid, shall be deemed to have waived any and all claims for damages because of cancellation of the Contract for any such reason. If the COUNTY declares the Contract cancelled for any of the above reasons, written notice to that effect shall be served upon the Surety. The Surety shall, within five (5) days, assume control and perform the Work as successor to CONTRACTOR.

If CONTRACTOR fails to begin delivery of material and equipment, to commence Work within the time specified, to maintain an acceptable rate of delivery of material, to execute the Work in the manner and at such locations as specified, or fails to maintain a Work program which will

insure the COUNTY's interest, or, if CONTRACTOR is not carrying out the intent of the Contract, the ENGINEER's written notice may be served upon CONTRACTOR and the Surety on its Faithful Performance Bond, demanding satisfactory compliance with the Contract.

If CONTRACTOR or its Surety does not comply with such notice within five (5) days after receiving it, or after starting to comply, fails to continue, the COUNTY may exclude it from the premises and take possession of all material and equipment, and complete the Work by COUNTY forces or by letting the unfinished Work to another CONTRACTOR, or by a combination of such methods. In any event, the cost of completing the Work shall be charged against CONTRACTOR and its Surety, and may be deducted from any money due or becoming due from the COUNTY. If the sums under the Contract are insufficient for completion, CONTRACTOR or Surety shall pay to the COUNTY within five (5) days after completion, all costs in excess of the Contract price.

If the Surety assumes any part of the Work, it shall take CONTRACTOR's place in all respects for that part, and shall be paid by the COUNTY for all Work performed by it in accordance with the Contract. If the Surety assumes the entire Contract, all money due CONTRACTOR at the time of its default shall be payable to the Surety as the Work progresses, subject to the terms of the Contract.

The provisions of this Section shall be in addition to all other rights and remedies available to the COUNTY under law. The COUNTY has the full right to pursue all of its legal and equitable remedies in regard to breach of this Contract.

9-7 RIGHT-OF-WAY DELAYS

If, through an act of commission or omission by the COUNTY, CONTRACTOR sustains loss which could not have been avoided by the judicious handling of forces, equipment, and plant, CONTRACTOR shall be entitled to reasonable compensation for such part of CONTRACTOR's actual loss, which in the opinion of the ENGINEER, was unavoidable.

Actual loss shall be understood to include no items of expense other than idle time of equipment and necessary payments for idle time of workers.

Compensation for idle time of equipment will be determined in the same manner as determinations are made for equipment used in the performance of Extra Work paid for on a force account basis, as provided in Section 10-4.1.1, "Labor," and no markup will be added in either case for overhead and profit.

9-8 TERMINATION OF CONTRACT

The Contract may be terminated by the ENGINEER when termination is authorized by Section 8-12, "Legal Actions Against the COUNTY," or by other provisions of the Contract which authorize termination. The COUNTY also reserves the right to terminate the Contract at any time upon a determination by the COUNTY that termination of the Contract is in the best interest of the COUNTY.

If the ENGINEER elects to terminate the Contract, the termination of the Contract and the total compensation payable to the Contract shall be governed by the following:

9-8.1 The ENGINEER will issue CONTRACTOR a written notice signed by the ENGINEER, specifying that the Contract is to be terminated. Upon receipt of

said written notice, CONTRACTOR will be relieved of further responsibility for damage to the Work (excluding materials) as specified in Section 8-16, "CONTRACTOR's Responsibility for the Work and Materials," and, except as otherwise directed in writing by the ENGINEER, CONTRACTOR shall:

- 9-8.1.1 Stop all Work under the Contract except that specifically directed to be completed prior to acceptance.
- 9-8.1.2 Perform Work the ENGINEER deems necessary to secure the project for termination.
- 9-8.1.3 Remove equipment and plant from the site of the Work.
- 9-8.1.4 Take such action as is necessary to protect materials from damage.
- 9-8.1.5 Notify all SUBCONTRACTORS and suppliers that the Contract is being terminated and that their contracts or orders are not to be further performed, unless otherwise authorized in writing by the ENGINEER.
- 9-8.1.6 Provide the ENGINEER with an inventory list of all materials previously produced, purchased, or ordered from suppliers for use in the Work, and not yet used in the Work, including its storage location, and such other information as the ENGINEER may request.
- 9-8.1.7 Dispose of materials not yet used in the Work as directed by the ENGINEER. It shall be CONTRACTOR's responsibility to provide the COUNTY with good title to all materials purchased by the COUNTY hereunder, including materials for which partial payment has been made as provided in Section 10-7, "Partial Payments," and to provide bills of sale or other documents of title for such materials.
- 9-8.1.8 Subject to the prior written approval of the ENGINEER, settle all outstanding liabilities and all claims arising out of subcontracts or orders for materials terminated hereunder. To the extent directed by the ENGINEER, CONTRACTOR shall assign to the COUNTY all the right, title and interest of CONTRACTOR under subcontracts or orders for materials terminated hereunder.
- 9-8.1.9 Furnish the ENGINEER with the documentation required to be furnished by CONTRACTOR under the provisions of the Contract including all documentation required under the Federal or State requirements included in the Contract, for projects for which Federal or State funds are involved.
- 9-8.1.10 Take such other actions as the ENGINEER may direct.
- 9-8.2 Acceptance of the Contract as hereinafter specified shall not relieve CONTRACTOR of responsibility for damage to materials. CONTRACTOR shall continue to be responsible for damage to materials after issuance of the Notice of Termination, except as follows:
 - 9-8.2.1 CONTRACTOR's responsibility for damage to materials for which partial payment has been made as provided in Section 10-7, "Partial Payments," and for unused materials furnished by the COUNTY for use in the Work, shall terminate when the ENGINEER certifies that such materials have been stored in the manner and at the desired locations as directed.

- 9-8.2.2 CONTRACTOR's responsibility for damage to materials purchased by the COUNTY, subsequent to the issuance of the notice that the Contract is to be terminated, shall terminate when title and delivery of such materials has been taken by the COUNTY.
- 9-8.2.3 After determining that CONTRACTOR has completed the Work under the Contract, which Work was directed to be completed prior to termination, and such other Work as may have been so ordered to secure the project for termination, the ENGINEER will recommend that the COUNTY formally accept the Contract. Immediately upon and after such acceptance by the COUNTY, CONTRACTOR will not be required to perform any further Work thereon and shall be relieved of any contractual responsibilities for injury to persons or property which occurs after the formal acceptance of the project by the COUNTY.
- 9-8.3 Termination of the Contract shall not relieve the Surety of its obligation for any just claims arising out of the Work performed.
- 9-8.4 The total compensation to be paid to CONTRACTOR shall be determined by the ENGINEER on the basis of the following:
- 9-8.4.1 The reasonable cost to CONTRACTOR, without profit, for all Work performed under the Contract, including mobilization, demobilization, and Work performed to secure the project for termination. In determining the reasonable cost, deductions will be made for the cost of materials to be retained by CONTRACTOR, amounts realized by the sale of materials, and for other appropriate credits against the cost of the Work. Reasonable cost will include a reasonable allowance for project overhead and general administrative overhead not to exceed a total of seven (7) percent of direct costs of such Work.
- When, in the opinion of the ENGINEER, the cost of a Contract item of Work is excessively high due to costs incurred to remedy or replace defective or rejected Work, the reasonable cost to be allowed will be the estimated reasonable cost of performing such Work in compliance with the requirements of the Plans and Specifications. The excessive actual cost shall be disallowed.
- 9-8.4.2 A reasonable allowance for profit on the cost of the Work performed as determined under Subsection (1), provided CONTRACTOR establishes, to the satisfaction of the ENGINEER, that it is reasonably probable that CONTRACTOR would have made a profit, had the Contract been completed. The profit allowed shall in no event exceed four (4) percent of cost.
- 9-8.4.3 The reasonable cost to CONTRACTOR of handling material returned to the vendor, which material was delivered to the COUNTY or otherwise disposed of, as directed by the ENGINEER.
- 9-8.4.4 A reasonable allowance for CONTRACTOR's administrative costs in determining the amount payable due to termination of the Contract.
- 9-8.5 All records of CONTRACTOR and SUBCONTRACTORS, necessary to determine compensation in accordance with the provisions of this Section, shall be open to inspection or audit by representatives of the COUNTY, at all times after issuance of the notice that the Contract is to be terminated. Such records shall be retained and kept open for inspection or audit for a period of three (3) years.

9-8.6 After acceptance of the Work by the COUNTY, the ENGINEER may recommend payments on the basis of interim estimates, pending issuance of the Final Estimate, in accordance with Section 10-9.1, "Final Payment and Claims," provided that in the ENGINEER's opinion, the amount thus paid together with all amounts previously paid or allowed, will not result in total compensation in excess of that to which CONTRACTOR will be entitled. All payments, including payment upon the Final Estimate, shall be subject to deduction for prior payments and amounts, if any, to be kept or retained under the provisions of the Contract.

9-8.7 The provisions of this Section 9-8 shall be included in all subcontracts.

9-9 COUNTY'S RIGHT TO TAKE POSSESSION OF THE WORK IN WHOLE OR IN PART

It is agreed that the County of Yolo has the right, at any time, to enter upon the premises of the Work and perform work not covered by this Contract, either by day labor or by direct contract with other CONTRACTORS, or to occupy and use a portion of the premises prior to the date of the final acceptance of the Work as a whole, without in any way relieving the CONTRACTOR of any obligations under this Contract.

Such use or occupation of the premises shall not be construed as an acceptance of any portion of the Work under this Contract.

9-10 COMPLETION

The provisions governing final inspection, field acceptance by the ENGINEER, and final acceptance by the Board of Supervisors shall be as set forth in Section 6-10, herein.

SECTION 10 - MEASUREMENT AND PAYMENT

10-1 MEASUREMENT OF QUANTITIES

Payment for all Work bid at a price per unit of measurement will be based upon the actual quantities of Work as measured upon completion. The COUNTY does not expressly or by implication agree that the actual amount of Work or materials of any class will correspond to the estimated quantities given in the Proposal. CONTRACTOR shall make no claim nor receive any compensation for anticipated profits, for loss of profit, for damages, or for any extra payment whatever because of any difference between the amount of Work actually done or materials furnished and the estimated amount.

All Work to be paid for at a Contract price per unit of measurement will be measured by the ENGINEER in accordance with United States Standard Measures. A ton shall consist of 2,000 pounds avoirdupois.

CONTRACTOR shall bear the expense of and make all arrangements for the measurement of materials paid for by weight.

All weighing, measuring, and metering devices used to measure the quantity of materials used in the Work shall be suitable for the purpose intended, and shall conform to the tolerances and specifications as outlined in Title 4, Chapter 8 of the California Administrative Code, and these Specifications.

Whenever pay quantities of material are determined by weighing, the scales shall be operated by a weighmaster licensed in accordance with the provisions of the California Business and Professions Code, Division 5, Chapter 7. Upon request by the ENGINEER, CONTRACTOR shall furnish a Public Weighmaster's Certificate, or a Private Weighmaster's Certificate, or certified daily summary weigh sheets. A representative of the COUNTY may, at the discretion of the ENGINEER, be present to witness the weighing and to check and compile the daily record of such scale weights.

The operator of each vehicle weighed shall obtain a weight or load slip from the weigher and deliver said slip to the ENGINEER at the point of delivery of the material.

Vehicles used to haul material being paid for by weight shall be weighed empty daily, and at such additional times as the ENGINEER may direct. Each vehicle shall bear a plainly legible identification mark.

Quantities of material wasted, or disposed of, in a manner not called for under the Contract; or rejected loads of material, including material rejected after it has been placed by reason of failure of CONTRACTOR to conform to the Provisions of the Contract; or material not unloaded from the transporting vehicle; or material placed outside of the lines indicated on the Plans or established by the ENGINEER; or material remaining on hand after completion of the Work; will not be paid for and such quantities will be deducted from the final total quantities. No compensation will be allowed for hauling and disposing of rejected material.

Full compensation for all expenses involved in conforming to the requirements specified in this Section shall be considered as included in the unit prices paid for the materials being measured or weighed, and no additional compensation will be allowed therefor.

10-2 SCOPE OF PAYMENT

Whenever it is specified that CONTRACTOR is to do Work or furnish materials of any class for which no price is fixed in the proposal, it shall be understood that he is to do such Work or furnish such materials without extra charge or allowance or direct payment of any kind. The cost of doing such Work or furnishing such materials is to be included in the price bid for such other items of Work as he may consider appropriate, unless it is expressly specified in the Contract Documents that such Work or materials is to be paid for as Extra Work.

CONTRACTOR shall accept the compensation provided in the Contract as full payment for furnishing all labor, materials, tools, equipment, and incidentals necessary to the completed Work and for performing all Work contemplated and embraced under the Contract; also for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until acceptance by the COUNTY; and for all risks of every description connected with the prosecution of the Work; and for all expenses incurred in consequence of the suspension or discontinuance of the Work as provided in the Contract; and for completing the Work according to the Plans and Specifications. Neither the payment of any estimate nor of any retained percentage shall relieve CONTRACTOR of any obligation to make good any defective Work or material.

No compensation will be made in any case for loss of anticipated profits. No compensation will be made in any case for materials delivered to site but not installed.

10-3 CHANGE ORDERS

When alterations in quantities of Work for which unit prices are shown in the Proposal are ordered and performed, the adjustment in the Contract amount shall be determined on the basis of such unit prices for the actual quantities of Work done, as specified in Sections 10-1 and 10-2, herein.

Adjustments, if any, in the amount to be paid CONTRACTOR by reason of any other modifications of the Work as set forth in the Contract Change Order, shall be determined by one or more of the following methods as elected by the ENGINEER:

- A. Lump Sum Price - By an acceptable lump sum proposal from CONTRACTOR.
- B. Unit Prices - By unit prices fixed by agreement between the COUNTY and CONTRACTOR.
- C. Force Account - By ordering CONTRACTOR to proceed with the Work and to keep and present in such form as the ENGINEER may direct, a correct account of the cost of the change, together with all vouchers therefor. The CONTRACTOR will be paid for labor, materials, and equipment rental actually used on the Change Order Work set forth in Section 10-4, herein.

10-4 FORCE ACCOUNT PAYMENT

When Contract Change Order is to be paid for on a force account basis, the labor, materials, and equipment used in the performance of such Work shall be subject to the approval of the ENGINEER, and compensation being determined as follows:

10-4.1 WORK PERFORMED BY CONTRACTOR

CONTRACTOR will be paid the direct costs for labor, materials and equipment used in performing the Work determined as hereinafter provided in Sections 10-4.1.1, "Labor," 10-4.1.2, "Materials," and 10-4.1.3, "Equipment Rental."

To the total of the direct costs computed as provided in Sections 10-4.1.1, "Labor," 10-4.1.2, "Materials," and 10-4.1.3, "Equipment Rental," there will be added a markup of 15 percent to the cost of labor, 15 percent to the cost of materials, and 15 percent to the equipment rental.

The above markups shall constitute full compensation for all overhead costs and profits, which shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Sections 10-4.1.1, "Labor," 10-4.1.2, "Materials," and 10-4.1.3, "Equipment Rental." The total payment made as provided above shall be deemed to be the actual cost of such Work to be borne by the COUNTY and shall constitute full compensation therefor.

When extra work to be paid for on a force account basis is performed by a SUBCONTRACTOR, approved in conformance with the provisions in Section 5-4, "Subcontracting," an additional markup of 5 percent may be added to the total cost of that extra work including all markups specified in this Section 10-4.1. The additional 5 percent markup shall reimburse the CONTRACTOR for additional administrative costs, and no other additional payment will be made by reason of performance of the extra work by a SUBCONTRACTOR

10-4.1.1 LABOR

CONTRACTOR will be paid the cost of labor for the workers including foremen when authorized by the ENGINEER, used in the actual and direct performance of the Work. The cost of labor, whether the employer is CONTRACTOR, SUBCONTRACTOR, or other forces, will be the sum of the following:

- A. Actual Wages
The actual wages paid shall include any employer payments to or on behalf of the workers for health and welfare, pension, vacation, and similar purposes. These wages for employees not employed full time on the Work, shall be apportioned on the basis of their time spent on the Work.
- B. Labor Surcharge
To the actual wages, as defined in Section 10-4.1.1A, will be added a labor surcharge set forth in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the contract. The labor surcharge shall constitute full compensation for all payments imposed by State and Federal laws and for all other payments made to, or on behalf of, the workers, other than actual wages as defined in Section 10-4.1.1A.

10-4.1.2 MATERIALS

The COUNTY reserves the right to furnish such materials as it deems advisable, and CONTRACTOR shall have no claims for costs and markup on such materials.

Only materials furnished by CONTRACTOR and necessarily used in the performance of the Work will be paid for. The cost of such materials will be the cost to the purchaser, whether CONTRACTOR, SUBCONTRACTOR, or other forces, from the supplier thereof, except as the following are applicable:

- A. If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the COUNTY notwithstanding the fact that such discount may not have been taken.
- B. If materials are procured by the purchaser by any method which is not a direct purchase from, and a direct billing, by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER, plus the actual costs, if any, incurred in the handling of such materials.
- C. If the materials are obtained from the supply or source owned wholly or in part by the purchaser, the cost of such materials shall not exceed the price paid by the purchaser for similar materials furnished from said source on Contract items, or the current wholesale price for such materials delivered to the job site, whichever price is lower.
- D. If the cost of such materials is, in the opinion of the ENGINEER, excessive, then the cost of such material shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned, delivered to the job site, less any discounts as provided in the above subsection A.
- E. If CONTRACTOR does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, the cost shall then be determined in accordance with the above subsection D.

10-4.1.3 EQUIPMENT RENTAL

CONTRACTOR will be paid for the use of equipment at the rental rates listed for such equipment in the edition of the Department of Transportation publication, "Labor Surcharge and Equipment Rental Rates," which is in effect on the date upon which the Work is accomplished and which is a part of the Contract, regardless of ownership and any rental or other agreement, if such may exist, for the use of such equipment entered into by CONTRACTOR. If it is deemed necessary by the ENGINEER to use equipment not listed in said publication, a suitable rental rate for such equipment will be established by the ENGINEER. CONTRACTOR may furnish any cost data which might assist the ENGINEER in the establishment of such rental rate.

The rental rate paid as above provided shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Operators of rented equipment will be paid for as provided in Section 10-4.1.1, "Labor."

All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer. Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$150 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

The rental time to be paid for equipment on the Work shall be the time the equipment is in operation on the Extra Work being performed.

The following shall be used in computing the rental time of equipment on the Work:

1. When hourly rates are listed, less than 30 minutes of operation shall be considered to be 1/2 hour of operation;
2. When daily rates are listed, less than four (4) hours of operation shall be considered to be 1/2 day of operation; and,
3. Rental time will not be allowed while equipment is inoperative due to breakdowns.

For the use of equipment moved in on the Work and used exclusively for Extra Work paid for on a force account basis, CONTRACTOR will be paid for the cost of transporting the equipment to the location of the Work and its return to its original location, all in accordance with the following provisions:

1. The original location of the equipment to be hauled to the location of the Work shall be agreed to by the ENGINEER in advance;
2. The COUNTY will pay the costs of loading and unloading such equipment;
3. The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers;
4. The cost of transporting equipment shall not exceed the applicable minimum established rates of the Public Utilities Commission;
5. Should the CONTRACTOR desire the return of the equipment to a location other than its original location, the COUNTY will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment to the Work; and,
6. Payment for transporting and loading and unloading equipment, as above provided, will not be made if the equipment is used on the Work in any other way than upon Extra Work paid for on a force account basis.

10-4.2 RECORDS

CONTRACTOR shall maintain project records in such a manner as to provide a clear distinction between the direct costs of Change Order Work paid for on a force account basis and the costs of other operations.

From the above records, CONTRACTOR shall furnish the ENGINEER completed daily Change Order Work reports, for each day's Change Order Work to be paid for on a force account basis. The daily Change Order Work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the CONTRACTOR, SUBCONTRACTOR, or other forces. The daily Change Order Work reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, the size, type, and identification number of equipment, and hours operated.

Material changes shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily Change Order Work reports, or if not available, they shall be submitted with subsequent daily Change Order Work reports. Should said vendor's invoices not be submitted within 60 days after the date of delivery of the material or within 15 days after completion of the Contract, whichever occurs first, the COUNTY reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials are available, in the quantities concerned, delivered to the location of Work, less any discounts provided in Section 10-4.1.2.A.

Said daily Change Order Work reports shall be signed by CONTRACTOR or an authorized representative.

The ENGINEER will compare the COUNTY's records with the completed daily Change Order Work reports furnished by the CONTRACTOR and make any necessary adjustments. When these daily Change Order Work reports are agreed upon and signed by both parties said reports shall become the basis of payment for the Work performed, but shall not preclude subsequent adjustment based on a later audit by COUNTY.

CONTRACTOR's cost records, pertaining to Work paid for on a force account basis, shall be open to inspection or audit by representatives of the COUNTY, during the life of the Contract, and for a period of not less than three (3) years after the date of acceptance thereof, and CONTRACTOR shall retain such records for that period. Where payment, for materials or labor, is based on the cost thereof to forces other than CONTRACTOR, CONTRACTOR shall make ever reasonable effort to insure that the cost records of such other forces will be open to inspection and audit, by representatives of the COUNTY, on the same terms and conditions as the cost records of CONTRACTOR. If an audit is to be commenced more than 60 days after the acceptance date of the Contract, CONTRACTOR will be given a reasonable notice of the time when such audit is to be given.

10-4.3 PAYMENT

Payment as provided in Section 10-4.1, "Work Performed by CONTRACTOR," shall constitute full compensation to CONTRACTOR, for performance of Work paid for on a force account basis, and no additional compensation will be allowed therefor.

10-5 NOTICE OF POTENTIAL CLAIM

CONTRACTOR shall not be entitled to the payment of any additional compensation for any act, or failure to act, by the ENGINEER, including failure or refusal to issue a Contract Change Order, or for the happening of any event, thing, occurrence, or other cause, unless CONTRACTOR shall have given the ENGINEER due written notice of potential claim as

hereinafter specified. Compliance with this Section 10-5 shall not be considered a prerequisite for matters within the scope of the protest provisions in Section 4-3, "Changes," or Section 9-4, "Time of Completion," or any claim which is based on differences in measurements or errors of computation as to Contract quantities.

The written notice of potential claim shall set forth the reasons for which CONTRACTOR believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The notice, as above required, must have been given to the ENGINEER prior to the time that CONTRACTOR shall have performed the Work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the ENGINEER, or in all other cases within 15 days after the happening of the event, thing, occurrence, or other cause, giving rise to the potential claim.

It is the intent of this Section 10-5 that differences between the parties arising, under and by virtue of the Contract, be brought to the attention of the ENGINEER at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. CONTRACTOR hereby acknowledges having no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing, or occurrence for which no written notice of potential claim was filed as herein required.

10-6 STOP NOTICES

The COUNTY, by and through the ENGINEER or other appropriate COUNTY officer or officers, may at its option and at any time retain out of any amounts due CONTRACTOR, sums sufficient to cover claims filed pursuant to Section 3179 et seq. of the Civil Code.

10-7 PARTIAL PAYMENTS

The Board of Supervisors, once in each month, shall cause an estimate in writing to be made by the ENGINEER. The estimate shall include the total amount of Work done to date and acceptable materials incorporated into the Work.

The COUNTY shall retain ten (10) percent of the estimated value of the Work done and acceptable materials incorporated into the Work as partial security for the fulfillment of the Contract by CONTRACTOR.

The ENGINEER shall show on the estimate the balance of the amount due CONTRACTOR, at the time of the estimate, less all previous payments and all sums to be kept or retained under the provisions of the Contract.

CONTRACTOR shall, upon receipt of the estimate, submit to the ENGINEER for payment, an invoice reflecting the balance shown on the estimate.

No such estimate or payment shall be required to be made when, in the judgment of the ENGINEER, the Work is not proceeding in accordance with the provisions of the Contract, or the total value of the Work done since the last estimate amounts to less than \$300.

No such estimate or payment shall be construed to be an acceptance of any defective Work or improper materials. Attention is directed to the express prohibition against payment to

unlicensed CONTRACTORS contained in Government Code Section 14311.5, the provisions of which are set forth in Section 8-1.8, "CONTRACTOR's Licensing Law."

10-8 SUBSTITUTION OF SECURITIES FOR WITHHELD MONEY

Pursuant to Government Code Section 4590 and Public Contract Code Section 10263, at the request and expense of CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the COUNTY, State Treasurer, or with a State or Federally chartered bank in California, as the escrow agent, who shall pay such monies to CONTRACTOR upon satisfactory completion of the Contract.

Alternatively, CONTRACTOR may request pursuant to Public Contract Code Section 10263, and the COUNTY shall make payment of retentions earned directly to the escrow agent. CONTRACTOR shall receive the interest earned on the investments upon the same terms provided for in this Section for securities deposited by 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.

Securities eligible for investment under this Section shall include those listed in Government Code Section 16430, or bank, savings and loan certificates of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and the COUNTY.

CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

Any escrow agreement entered into pursuant to this Section shall be substantially similar to the form provided by Public Contract Code Section 10263(e).

10-9 PAYMENT AFTER ACCEPTANCE

After the Work has been accepted by the COUNTY as provided in Section 6-10, "Final Inspection, Field Acceptance and Acceptance by the Board," payments will be made to CONTRACTOR subject to the provisions in that Section.

10-9.1 FINAL PAYMENT AND CLAIMS

After acceptance by the BOARD, ENGINEER will prepare a proposed final estimate, in writing, of the total amount payable to CONTRACTOR. This final estimate will include an itemization of the final Contract amount, segregated as to Contract item quantities, Change Order Work and any other basis for payment. It will show therein all deductions made or to be made, for prior payments, and amounts to be kept or retained under the provisions of the Contract. All prior estimates and payments shall be subject to correction in the proposed final estimate.

The COUNTY shall file a Notice of Completion with the County Recorder's Office after acceptance of the Contract.

Within 30 days after recordation of the Notice of Completion, CONTRACTOR shall submit to the ENGINEER written approval of said proposed final estimate or a written statement of all claims

arising under or by virtue of the Contract. No claim will be considered that was not included in said written statement of claims, nor will any claim be allowed for which a notice or protest is required by the provisions in Section 4-3, "Changes," 9-4, "Time of Completion," 9-5, "Liquidated Damages," and 10-5, "Notice of Potential Claim," unless CONTRACTOR has complied with the Notice of Protest requirements in said Section.

Upon CONTRACTOR's approval, or failure to file a claim within said period of 30 days, the proposed final estimate submitted to the CONTRACTOR shall become the final estimate, and within 30 days thereafter, the COUNTY will pay the entire sum so found to be due. Such final estimate and payment thereon shall be conclusive and binding against both parties to the Contract, on all questions relating to the amount of Work done and the compensation payable therefor, except as otherwise provided in Sections 10-4-2, "Records," and 10-10, "Clerical Errors."

If CONTRACTOR within said period of 30 days files claims, the COUNTY shall make payment based on the proposed final estimate, pending final determination by the ENGINEER, regarding said claims as provided in this Section 10-9.

The claims filed by CONTRACTOR shall be in sufficient detail to enable the ENGINEER to ascertain the basis and amount of said claims. The ENGINEER will consider and determine CONTRACTOR's claims. CONTRACTOR must furnish within a reasonable time such further information and details as may be required, by the ENGINEER, to determine the facts or contentions involved in the claims. Failure to submit such information and details will be sufficient cause for denying the claims.

The ENGINEER will make the final determination of any claims which remain in dispute after a completion of a claim's review. CONTRACTOR may meet with the ENGINEER to make a presentation in support of such claims.

Upon final determination of the claims, the ENGINEER shall then make and issue a final estimate in writing. Within 30 days thereafter the COUNTY will pay the entire sum, if any, found due thereon. Such final estimate shall be conclusive and binding against both parties to the Contract, on all questions relating to the amount of Work done and the compensation payable therefor, except as otherwise provided in Sections 10-4.2, "Records," and 10-10, "Clerical Errors."

10-10 CLERICAL ERRORS

Notwithstanding the provisions in Section 10-9, "Payment After Acceptance," for a period of three (3) years after acceptance of the Work, all estimates and payments made pursuant to said Section 10-9, including the final estimate and payment, shall be subject to correction and adjustment for clerical errors in the calculations involved in the determination of quantities and payments. CONTRACTOR and the COUNTY agree to pay to the other any sum due under the provisions of this Section 10-10, provided, however, if the total sum to be paid is less than \$200, no such payment shall be made.

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PART 3 - TECHNICAL PROVISIONS ANAEROBIC COMPOSTER CONSTRUCTION

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SECTION 1 - LEFT INTENTIONALLY BLANK

SECTION 2 - GEOMEMBRANE LEAK REPAIR

2-1 GENERAL

2-1-1 SECTION INCLUDES

- A. A third party consultant will be hired under a separate contract with the COUNTY to perform the geomembrane leak location survey. The primary liner will be surveyed using the dipole electrical leak location method (ASTM D-7002-16) to detect for the presence of leaks missed during geomembrane installation. The CONTRACTOR (NON-GEOSYNTHETIC) shall provide support to the leak location consultant as described within this Section. The CONTRACTOR (GEOSYNTHETIC) shall repair all leaks found.

2-1-2 RELATED SECTIONS

- A. SECTION 7 - DRAINAGE GEOCOMPOSITE
- B. SECTION 8 - HDPE BOOT AND SPARK TESTING
- C. SECTION 9 - HIGH DENSITY POLYETHYLENE (HDPE) GEOMEMBRANE
- D. SECTION 12 - LEAK DETECTION SUMP

2-1-3 SUBMITTALS

- A. If necessary, the leak detection consultant shall provide any permanent electrodes, wires, and installation instructions to the CONTRACTOR (NON-GEOSYNTHETIC) prior to the installation of the geomembrane.
- B. The leak detection consultant shall submit a testing schedule to the CONTRACTOR (GEOSYNTHETIC) and ENGINEER prior to mobilization of the field personnel.
- C. The leak detection consultant shall report the general results of the survey to the CONTRACTOR (GEOSYNTHETIC) and ENGINEER during the daily progress of the field work.
- D. Prior to the demobilization of the survey personnel from the site, the leak detection consultant shall submit a list of locations of the leaks detected to the ENGINEER, and CONTRACTOR (GEOSYNTHETIC).
- E. The leak detection consultant shall submit a letter report documenting the field work and results of the surveys to the ENGINEER within ten (10) days after completion of the field work signed by a Registered Civil Engineer in the State of California.

2-2 PRODUCTS

Not Used.

2-3 EXECUTION

2-3-1 PREPARATION AND SUPPORT

- A. The CONTRACTOR (NON-GEOSYNTHETIC) is responsible for preparing the landfill for the leak location survey. The preparation consists of, but is not limited to, the following:
 - 1. Coordinate with the leak location consultant to provide a survey area within each cell that is electrically isolated from the surrounding ground. Isolation can be accomplished by open trenching or installation of a non-conductive insulator such as the liner materials.
 - 2. Provide the leak location consultant the liner installation schedule.
 - 3. Provide and install any ground wires located under the geomembrane in accordance with the leak location consultant's requirements.
 - 4. For contractor scheduling, it can be assumed that the leak location survey rate will be two acres per day.
- B. Following placement of geomembrane, the COUNTY shall place up to six holes in the geomembrane to confirm the accuracy of the leak location survey. The CONTRACTOR (GEOSYNTHETIC) shall repair all leaks in accordance with the Specifications.

2-3-2 DIPOLE LEAK LOCATION SURVEY

- A. The dipole leak detection survey shall be performed after the placement of the primary liner and the Leak Detection Sump.
- B. The leak location consultant is responsible for calibrating all equipment utilized to achieve optimum data quality and sensitivity for the site conditions.
- C. All work shall be performed in accordance with current industry and ASTM standards.
- D. Measurements shall be made on top of the primary liner while the survey personnel are on site to verify leak signals and to pinpoint the leak positions on the exposed liner for repair.
- E. Leak locations shall be logged, visibly marked, and reported for repair. After completion of the survey, the CONTRACTOR (GEOSYNTHETIC) shall repair all leaks identified by the leak location survey.
- F. The leak location consultant shall report the general results of the survey to the Lead CQA INSPECTOR, CONTRACTOR (GEOSYNTHETIC) and COUNTY during the daily progress of the field work.

- G. Prior to the demobilization of the survey personnel from the site, the leak location consultant shall submit a list of locations of the leaks detected to the Lead CQA INSPECTOR, COUNTY, AND CONTRACTOR (GEOSYNTHETIC).
- H. The leak location consultant shall be remobilized (if necessary) to retest areas of severe damage where smaller leaks may have been masked by strong signals. Any new leaks shall be marked and repaired immediately.
- I. The leak location consultant shall submit a letter report documenting the field work and results of the surveys to the ENGINEER and CONTRACTOR (GEOSYNTHETIC) within ten (10) days after completion of the field work.

2-4 MEASUREMENT AND PAYMENT

2-4-1 MEASUREMENT

- A. There shall be no separate measurement for Geomembrane Leak Repair.

2-4-2 PAYMENT

- A. Payment for Geomembrane Leak Repair is included as part of liner installation, Bid Item 2 (costs for labor, equipment, and materials) to repair identified leaks, including those made by the COUNTY as described in the Construction Drawings and Specifications.

SECTION 3 - LEFT INTENTIONALLY BLANK

SECTION 4 - LEFT INTENTIONALLY BLANK

SECTION 5 - LEFT INTENTIONALLY BLANK

SECTION 6 - LEFT INTENTIONALLY BLANK

SECTION 7 - DRAINAGE GEOCOMPOSITE

7-1 GENERAL

7-1-1 DESCRIPTION

- A. Furnishing all labor and equipment necessary for installing the Drainage Geocomposite for the site in accordance with the Specifications and the Construction Drawings. Geocomposite will be provided by the COUNTY.
- B. Geocomposite described in this section will be geonet with geotextile heat bonded on both sides prior to delivery to the site. This combination, which is pre-fabricated in the plant prior to shipment to the site, is termed as Double Sided Drainage Geocomposite.

7-1-2 RELATED SECTIONS

- A. SECTION 7 - HDPE GEOMEMBRANE

7-1-3 REFERENCES

- A. GRI GC7 – Standard Guide for the Determination of Adhesion and Bond Strength of Geocomposites
- B. ASTM D792 – Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement
- C. ASTM D1603 – Standard Test Method for Carbon Black in Olefin Plastics
- D. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity
- E. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles
- F. ASTM D4716 – Standard Test Method for Constant Head Hydraulic Transmissivity of Geotextiles and Geotextile Related Products
- G. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile
- H. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
- I. ASTM D4873 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
- J. ASTM D5035 – Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Strip Method)

- K. ASTM D5199 – Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
- L. ASTM D5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles

7-1-4 DEFINITIONS

- A. Batch: A quantity of resin, usually the capacity of one railcar, used in the fabrication of high density polyethylene (HDPE) geocomposite. A roll number corresponding to the particular quantity of resin used will identify the finished product.
- B. Construction Quality Assurance Consultant (CQAC): The party, independent from MANUFACTURER or CONTRACTOR (GEOSYNTHETIC), that is responsible for observing and documenting activities related to the quality assurance of production and installation of the geosynthetic components of the lining system.
- C. Construction Quality Assurance (CQA) Laboratory: The party, independent from the COUNTY, MANUFACTURER, Fabricator, and CONTRACTOR (GEOSYNTHETIC), responsible for conducting tests on samples of geosynthetics obtained at the site.
- D. Construction Quality Assurance (CQA) INSPECTOR: The site representative of the CQAC.
- E. Fabricator: The party responsible for the fabrication of geocomposite panels constructed from rolls received from the MANUFACTURER.
- F. Geocomposite MANUFACTURER: The party responsible for the production of the geocomposite rolls from resin and for the quality control of the resin.
- G. Geocomposite Subsurface: The surface on which the geocomposite lies.
- H. CONTRACTOR (GEOSYNTHETIC): The party responsible for field handling, transporting, storing, deploying, seaming, temporarily restraining (against wind), and installing the geocomposite.

7-1-5 SUBMITTALS (PRE-CONSTRUCTION)

- A. Schedules and Drawings -CONTRACTOR (GEOSYNTHETIC)
 - 1. Submit installation schedule one week prior to installation. Include hours worked per day, per week and per shift. Indicate all weather delays built into schedule.
 - 2. Installation layout drawings: Two weeks prior to installation of geocomposite, submit detailed drawings showing the proposed panel and seam layout indicating both fabricated (if applicable) and field seams.

7-1-6 SUBMITTALS DURING CONSTRUCTION -CONTRACTOR (GEOSYNTHETIC)

- A. Submit quality control documentation prepared during installation within one week of completing the work activity.
- B. Submit daily prior to the start of installation, acceptance certificate for the underlying surface signed by the installation supervisor for each area to be covered by geocomposite.

7-1-7 Submit upon completion of the installation CONTRACTOR (GEOSYNTHETIC)

- A. Certificate stating the geocomposite has been installed in accordance with the Construction Drawings and Specifications.
- B. The installation warranty.
- C. As-built drawings showing location of panels, major repairs, and patches, including measurements.

7-1-8 QUALIFICATIONS

- A. Installation Qualifications
- B. CONTRACTOR (GEOSYNTHETIC): Must have successfully installed a minimum of 1,000,000 square feet of drainage geocomposite with documented references.

7-1-9 QUALITY ASSURANCE

- A. The COUNTY will engage and pay for the services of (1) Construction Quality Assurance Consultant (CQAC), and (2) Construction Quality Assurance (CQA) Laboratory for monitoring the quality of geocomposite.

7-1-10 DELIVERY, STORAGE, AND HANDLING

- A. General: Conform to the MANUFACTURER's requirements.
- B. BLANK
- C. Storage on Site: CONTRACTOR (GEOSYNTHETIC)
 - 1. Store geocomposite rolls in the space allocated by the ENGINEER.
 - 2. Store geocomposite rolls to protect from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or other damage.
 - 3. Store geocomposite rolls on prepared surface (not on wooden pallets).
 - 4. Stack geocomposite rolls as per the manufacturer's recommendation.
- D. Handling on Site: CONTRACTOR (GEOSYNTHETIC).

1. Use appropriate handling equipment to load, move, and deploy geocomposite rolls. Appropriate handling equipment includes cloth chokers and spreader bars for loading, and spreader and roll bars for deployment. Dragging panels on ground surface will not be permitted.
2. Do not fold geocomposite; folded material will be rejected.
3. CONTRACTOR (GEOSYNTHETIC) is responsible for off-loading, storage, and transporting material from storage area to installation site.

7-2 PRODUCTS

7-2-1 GEOCOMPOSITE LABELING

- A. Geocomposite will be provided by the COUNTY and will have the following information on geocomposite roll labels:
 1. Length, width, and weight.
 2. Name of MANUFACTURER and Fabricator.
 3. Directions for unrolling.
 4. Product identification; lot number, batch number, and roll number.

7-2-2 GEONET

- A. The resin will be first quality High Density Polyethylene (HDPE), manufactured specifically for producing geonet for use in drainage systems. Mixing of different resin types, recycled materials, or seconds will not be allowed.
- B. The geonet will meet the following requirements unless otherwise approved:

Table 7-1 GEONET PROPERTIES

Test	Test Designation	Requirement
Density ⁽¹⁾	ASTM D792 Method A or ASTM 1505	Minimum 0.932 g/cm ³
Carbon Black	ASTM D1603	2% to 3%
Tensile Strength	ASTM D5035	Minimum 50 lbs/in
Thickness	ASTM D5199	Minimum 0.25 inch
Notes: ⁽¹⁾ Measured on resin prior to addition of carbon black. Maximum 0.965 g/cm ³ with carbon black.		

7-2-3 GEOTEXTILE

- A. Geotextile used for filtration conforming to the following minimum average roll values (MARV) as defined by the Federal Highway Administration for the following properties listed:

Table 7-2 GEOTEXTILE PROPERTIES

Test	Test Designation	Requirement
Mass per Unit Area	ASTM D5261	8 oz/yd ²
Grab Tensile and Elongation	ASTM D4632	Minimum 220 lbs and 50%
Puncture Resistance	ASTM D4833	Minimum 120 lbs
Trapezoidal Tear	ASTM D4533	Minimum 95 lbs
Permittivity	ASTM D4491	Minimum 110 gal/min/ft ²
Apparent Opening Size	ASTM D4751	Maximum 0.18 mm

7-2-4 GEOCOMPOSITE

- A. Drainage geocomposites will be high-flow material.
- B. Geonet will be heat bonded to both layers of geotextile, double-sided.
- C. No delamination (separation between the geonet and geotextile) greater than 6 sf area within a 6-foot radius of any point w be allowed.
- D. Delaminated edge: 12" MAX allowable.
- E. The geocomposite will meet the following requirements unless otherwise approved:

Table 7-3 GEOCOMPOSITE PROPERTIES

Test	Test Designation	Requirement
Hydraulic Transmissivity ⁽¹⁾	ASTM D4716	Minimum 1x10 ⁻⁴ m ² /sec
Ply Adhesion	GRI GC7	Minimum 0.5 lbs/in, Average 1.0 lbs/in (1-minute test)
Notes: ⁽¹⁾ Geocomposite measured at a load of 250 psf and a gradient of 0.1 sandwiched between a bottom layer of LLDPE or HDPE geomembrane and a top layer of sand.		

7-2-5 MANUFACTURER SOURCE QUALITY CONTROL

- A. Perform the following quality control tests at the manufacturing plant or other laboratories on geonet, geotextile, and geocomposite products:

Table 7-4 MANUFACTURER'S QUALITY CONTROL TESTING REQUIREMENTS

Test	Test Designation	Frequency (see footnotes)
Geonet		
Density	ASTM D792 Method A or ASTM 1505	(2)
Carbon Black	ASTM D1603	(2)
Tensile Strength	ASTM D5035	(2)
Thickness	ASTM D5199	(2)
Geotextile		
Mass per Unit Area	ASTM D5261	(3)
Grab Tensile and Elongation	ASTM D4632	(3)
Puncture Resistance	ASTM D4833	(3)
Permittivity	ASTM D4491	(1)
Apparent Opening Size	ASTM D4751	(1)
Geocomposite		
Ply Adhesion	GRI GC7	(2)
Hydraulic Transmissivity	ASTM D4716	(1)

Test	Test Designation	Frequency (see footnotes)
Notes: (1) One per 540,000 square feet produced or one per resin batch, whichever results in the greatest number of tests. (2) One per 50,000 square feet produced or one per resin batch, whichever results in the greatest number of tests. (3) One per 90,000 square feet produced or one per resin batch, whichever results in the greatest number of tests.		

7-3 EXECUTION

7-3-1 PREPARATION

- A. After the CQA INSPECTOR and the ENGINEER approve the geocomposite, it shall be placed over the geomembrane as shown on the Construction Drawings.
- B. Installation shall be in accordance with the MANUFACTURER's instructions and these Specifications. Where a conflict arises, these Specifications will prevail.

7-3-2 GEOCOMPOSITE INSTALLATION

- A. Deployment.
 - 1. Daily Panel Deployment: Deploy no more panels in one shift than can be secured during that same shift.
 - 2. Do not damage geocomposite by handling, by trafficking, leakage of hydrocarbons, or any other means.
 - 3. Unroll geocomposite panels using methods that will not damage, stretch or crimp geocomposite. Protect underlying surface from damage.
 - 4. Do not allow any vehicular traffic directly on geocomposite.
 - 5. Visually inspect geocomposite for imperfections. Mark faulty or suspect areas for repair.
- B. Place geocomposite with the machine direction (lengthwise) of the roll oriented down the slope.
- C. Connections for geonet core shall be overlapped a minimum of 6-inches along the length and if approved by the ENGINEER, one foot along the width (ends).
- D. Connections for geonet core shall be made using nylon ties secured at 5-foot intervals along the length and 3" centers along the width (ends).
- E. Edges and ends of the geotextile on all panels shall be sewn or heat bonded, if approved by the ENGINEER, for the entire length of the panel with other adjacent panels. No geonet shall be exposed where soil can enter the geocomposite.

- F. Edges and ends, that do not have extra delaminated geotextile and the geonet is exposed, shall be covered with 2 -foot wide piece of geotextile to prevent soil from entering the geocomposite. The geotextile shall be heat bonded to the top layer of geotextile of the geocomposite to secure the geotextile during placement of the overlying soil.
- G. Defects and Repairs.
 - 1. Examine areas of the geocomposite for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter. The surface of the geocomposite must be clean at the time of the examination.
 - 2. Damaged geocomposite shall be removed and repaired according to Part 3.4 of this Section.
- H. Temporarily anchor the geocomposite at the crest of the slope (prior to placement of the vegetative/protective soil cover) using at a minimum, two continuous rows of sandbags. Place additional sand bags as necessary to temporarily anchor the geocomposite.

7-3-3 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

- A. MANUFACTURER, Fabricator, and CONTRACTOR (GEOSYNTHETIC), will participate and conform with all terms and requirements of the COUNTY's construction quality assurance program. The CONTRACTOR (GEOSYNTHETIC) is responsible for assuring this participation.
- B. Field construction quality control and quality assurance requirements shall be performed as specified in the CQA Plan.
- C. The COUNTY may perform additional testing to determine the conformance of the materials with these Specifications and the Construction Drawings.

7-3-4 REPAIR PROCEDURES

- A. Remove damaged geocomposite and replace with acceptable geocomposite materials if damage cannot be satisfactorily repaired.
- B. Repair, removal, and replacement are at CONTRACTOR's (GEOSYNTHETIC) expense if the damage results from the CONTRACTOR's (GEOSYNTHETIC), or the CONTRACTOR's (GEOSYNTHETIC) SUBCONTRACTOR activities.
- C. Repair any portion of the geocomposite exhibiting a flaw. Agreement upon the appropriate repair method will be determined between the ENGINEER, the CQA INSPECTOR and the CONTRACTOR (GEOSYNTHETIC). Repair procedures available include:

1. Geocomposite Patching: Used to repair large holes, tears, by overlapping geocomposite 6-inches in all directions and tying every 1 foot around the perimeter of the repair piece.
2. Geotextile Patching: Used to repair tears by tying the existing torn geocomposite every 6 inches and covering with a layer of geotextile overlapping the tear 1 foot and heat bonding the geotextile to the top layer of geotextile of the geocomposite.

7-3-5 GEOCOMPOSITE ACCEPTANCE

- A. CONTRACTOR (GEOSYNTHETIC) retains all responsibility for the geocomposite until acceptance by the COUNTY.
- B. COUNTY accepts geocomposite when all the following have been completed:
 1. The installation is complete.
 2. Conformance tests verify product requirements.
 3. Documentation of installation is complete including the CQA INSPECTOR'S final report.
 4. Verification of the adequacy of all seams and repairs, including associated testing, is complete.
 5. Written certification documents have been received by the ENGINEER.
 6. The Yolo County Board of Supervisors accepts the project as complete and a Notice of Completion has been filed with the Clerk of the Board of Supervisors.

7-4 MEASUREMENT AND PAYMENT

7-4-1 MEASUREMENT

- A. The quantity for the Drainage Geocomposite, Bid Item 3, shall be the square foot measured by GPS survey.

7-4-2 PAYMENT

- A. Payment for the Drainage Geocomposite, Bid Item 3, includes all costs to install the drainage geocomposite as described in this Section, and as shown on the Construction Drawings.
- B. Payment for the Drainage Geocomposite, Bid Item 3, includes all costs to wrap ends of geocomposite with textile and to do all repair patches with textile.
- C. Payment also includes all items incidental to the Work including but not limited to:
 1. Protecting the work area.
 2. Material samples, sampling, and testing.

3. Layout surveying.
4. Rejected material removal, re-testing, handling, and repair.
5. Clean up.
6. Mobilization and demobilization.

SECTION 8 - HDPE BOOT AND SPARK TESTING

8-1 GENERAL

8-1-1 DESCRIPTION

- A. Installing prefabricated HDPE boots and perform the geomembrane boot spark test (DC method) to survey for leaks. The test procedures are defined in ASTM D6365 as noted on the plans. Prefabricated HDPE boots will be provided by the COUNTY.

8-1-2 RELATED SECTIONS

- A. SECTION 7 - DRAINAGE GEOCOMPOSITE
- B. SECTION 9 – HDPE GEOMEMBRANE
- C. SECTION 10 – FABRIC-ENCASED GEOSYNTHETIC CLAY LINER

8-1-3 SUBMITTALS

- A. CONTRACTOR (GEOSYNTHETIC) shall provide any permanent electrodes, wires, and installation instructions to the COUNTY prior to the installation of any boots.
- B. CONTRACTOR (GEOSYNTHETIC) shall submit a testing schedule to the COUNTY prior to mobilization of the field personnel.
- C. CONTRACTOR (GEOSYNTHETIC) shall coordinate with CQA MONITOR to observe spark testing of HDPE boots.
- D. Results of the HDPE boot spark testing shall be reported by CONTRACTOR (GEOSYNTHETIC) to the COUNTY and CQA MONITOR daily.

8-2 PRODUCTS

Not Used.

8-3 EXECUTION

8-3-1 PREPARATION AND SUPPORT

- A. The CONTRACTOR (GEOSYNTHETIC) is responsible for preparing the boots for spark testing. The preparation consists of, but is not limited to, the following:
 - 1. Coordinate with the CQA MONITOR to observe testing.
 - 2. Provide and install any ground wires located under the geomembrane in accordance with the requirement of ASTM D6365 test.

3. For bidding purposes and CONTRACTOR (GEOSYNTHETIC) scheduling, it can be assumed that the spark testing rate will take two days.

8-3-2 SPARK TEST (DC TESTING)

- A. Because of very high voltage used during the spark test, extreme care must be taken and warning signs be placed by the leak testing consultant. The liner must be dry when being tested.
- B. The CONTRACTOR (GEOSYNTHETIC) is responsible for calibrating all equipment utilized to achieve optimum data quality and sensitivity for the site conditions.
- C. All work shall be performed in accordance with current industry and ASTM standards.
- D. Leak testing shall be made on all boots located on the primary and secondary liner.
- E. The CONTRACTOR (GEOSYNTHETIC) shall repair all leaks identified.
- F. Results shall be reported to the Lead CQA INSPECTOR, CONTRACTOR (GEOSYNTHETIC) and COUNTY during the daily progress of the field work.

8-4 MEASUREMENT AND PAYMENT

8-4-1 MEASUREMENT

- A. There shall be no separate measurement for preparation of HDPE Boot Spark Testing

8-4-2 PAYMENT

- A. Payment for preparation of HDPE boot for spark testing is covered under a separate payment item, Leak Detection Sump, Bid Item 1.

SECTION 9 - HIGH DENSITY POLYETHYLENE (HDPE) GEOMEMBRANE

9-1 GENERAL

9-1-1 DESCRIPTION

- A. Installing high density polyethylene (HDPE) geomembrane as noted on the Plans. HDPE geomembrane will be provided by the COUNTY.

9-1-2 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- A. American Society for Testing and Materials (ASTM) Publications:

D 638	Standard Test Method for Tensile Properties of Plastics
D 792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
D 1004	Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting
D 1238	Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
D 1505	Standard Test method for Density of Plastics by the Density-Gradient Technique
D 1603	Standard Test Method for Carbon Black in Olefin Plastics
D 4833	Test Method for Puncture Resistance of Geotextiles, Geomembranes and Related Products
D 5596	Microscopic Evaluation of Dispersion of Carbon Black in Polyolefin Geosynthetics
D 5994	Standard Practice for Measuring Core Thickness of Textured Geomembrane
D 6392	Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

9-1-3 DEFINITIONS

- A. Panel: A Panel is the unit area of geomembrane that is to be seamed in field. If the geomembrane is not fabricated into panels in a factory, a panel is identified as a roll or a portion of roll cut in field.
- B. Field Control Testing: Material conformance testing shall be the responsibility of the County and shall be performed by an approved commercial testing laboratory. Seam continuity testing shall be the responsibility of the CONTRACTOR (GEOSYNTHETIC) and shall be observed by the CQA MONITOR.

- C. Film Tear Bond (FTB): Failure of a seamed test sample which occurs in the sheet material on either side of the seam, and not in the seam itself.
- D. Minimum Individual Test Value (MITV): The minimum value allowed during the performance of quality assurance testing obtained for a given property.

9-1-4 SUBMITTALS

Submit the following to the ENGINEER:

A. BLANK

B. BLANK

C. Extrudate Certification:

Provide certification the extrudate produced for this project have the same properties as the geomembrane, represented in the material specification sheets which meet the project requirements seven (7) days prior to shipment to site.

D. BLANK

E. Panel Layout Drawing:

Provide copies of the panel layout drawing for the deployment and seaming of each geomembrane seven (7) days prior to shipment to site. The panel layout drawing shall include panel numbers, and seam numbers.

F. Subgrade Surface Acceptance:

Provide written acceptance of liner subgrade surface in accordance with section 9-3.3.

G. Record Drawings:

Provide reproducible record (as-built) drawings showing, at a minimum, panel numbers, seam numbers, and location of patches and destructive seam samples within seven (7) days after completion of each geomembrane installation (primary and secondary liner).

9-2 PRODUCTS

9-2-1 HDPE GEOMEMBRANE RESIN (COUNTY'S RESPONSIBILITY WHEN ORDERING HDPE GEOMEMBRANE LINER)

A. High Density Polyethylene (HDPE) Resin:

1. Use new, first quality resin compounded and manufactured specifically for the purpose of producing HDPE membranes.

2. No intermixing with other resin types or blending of recycles or seconds shall be allowed.
3. No reclaimed polymer shall be added. The edges of HDPE liner that are trimmed during the manufacturing process are not considered reclaimed polymer.

B. HDPE Resin Testing

The HDPE resin shall be tested and certified by the manufacturer to meet the specifications in Table 9-2.1 at a minimum frequency of one test per batch of resin.

Table 9-2.1 – HDPE Resin Specifications

Test Method	Properties	Specified Values
ASTM D 1505	Specific Gravity (not including carbon black)	0.935 to 0.945
ASTM D 1238 Condition 190/2.16	Melt Index	< 1 gram per 10 minutes

9-2-2 GEOMEMBRANE ROLLS (COUNTY'S RESPONSIBILITY WHEN ORDERING HDPE GEOMEMBRANE LINER)

A. 60-mil thick HDPE textured surface two (2) sides geomembrane:

1. Identify processing aids, antioxidants, and any other additives other than carbon black by name and percent.
2. Total combined percentage of processing aids, antioxidants, carbon black and other additives shall be less than 3.5 percent by weight of finished geomembrane (no more than 3 percent carbon black).
3. Thoroughly disperse additives throughout geomembrane.
4. No holes, cuts, folds, pinholes, bubbles, blisters, gels and undispersed resin. Such faults at a rate greater than one patchable fault per 5,000 square feet shall constitute unsatisfactory material and such unsatisfactory material shall not be allowed on the job site.
5. No contamination by foreign matter.
6. No nicks or cuts on liner edges.
7. Supply in rolls (no folding permitted).
8. Identify each roll with label indicating:

- Thickness
- Length and width
- Manufacturer
- Plant location
- Roll No., Lot No. and weight

B. HDPE Geomembrane Roll Testing (COUNTY'S RESPONSIBILITY WHEN ORDERING HDPE GEOMEMBRANE LINER)

The HDPE geomembrane rolls shall be tested and certified by the manufacturer to meet the specifications in Table 9-2.2 at a minimum frequency of one test per 3 rolls.

Table 9-2.2 – Textured HDPE Geomembrane Properties

Property	ASTM Test Method	Qualifier	Units	Specification				
				30	40	60	80	100
Thickness	D 5994 ¹	min. avg.	mils	29	40	60	76	95
		min.	mils	26	36	54	68	85
Density	D 1505	min.	g/cc	0.94				
Melt Index (resin)	D 1238 ²	max.	g/10 min.	1.0				
Carbon Black Content	D 1603	range	%	2.0 to 3.0				
Carbon Black Dispersion	D 5596 ³	rating	-	See Note 3				
Tensile Properties	D 638 ⁴							
1. Yield strength		min.	lb/in	63	84	126	168	210
2. Break strength		min.	lb/in	45	60	90	120	150
3. Elongation at yield		min.	%	13				
4. Elongation at break		min.	%	100				
Tear Resistance	D 1004 ⁵	min.	lb	21	30	45	56	70
Puncture Resistance	D 4833	min.	lb	45	52	90	120	150

- 10 Measurements across the width of the roll (perpendicular to the machine direction) and report average, standard deviation, and lowest individual readings.
- Condition E, 190°C, 2.16 kg.
- At least 9 of the specimens will be Category 1 or 2. No more than one specimen shall be Category 3.
- Type IV die. ASTM D638 test specimen shall be used.
 - The grip separation shall be 2.5 inches. This test does not require the use of extensometers. The rate of grip separation will be 2 inches per minute.
 - Machine direction (MD) and Transverse direction (TD) average values should be on the basis of 5 test specimens in each direction.
 - Yield elongation is based upon a gauge length of 1.3 inches. Break elongation is based upon a gauge length of 1.3 inches.
- Die C

9-2-3 GEOMEMBRANE ROLL CONFORMANCE TESTING

Geomembrane rolls shall be sampled upon delivery to the site by the CQA MONITOR at a frequency of 1 sample per 50,000 square feet of geomembrane delivered. The CONTRACTOR (GEOSYNTHETIC) shall assist the CQA MONITOR in obtaining the samples. The Geomembrane samples shall be tested by an independent laboratory for conformance with the specifications in Table 9-2.2 for the following tests:

- Carbon Black Content
- Carbon Black Dispersion
- Thickness

4. Specific Gravity
5. Tensile Properties

9-2-4 EXTRUDATE ROD AND BEAD

A. High Density Polyethylene (HDPE):

1. Use same resin and same supplier as used to produce the geomembrane used for this project.
2. Identify processing aids, antioxidants and other additives other than carbon black by name and percent.
3. Keep total combined percentage of processing aids, antioxidants, carbon black and other additives under 3.5% by weight of finished rod or bead (no more than 3% carbon black).
4. Thoroughly disperse additives throughout rod or bead.
5. No contamination by foreign matter.

B. HDPE Extrudate Rod and Bead Testing:

The HDPE extrudate rod and bead shall be tested and certified by the manufacturer to meet the specifications in Table 9-2.4 at a minimum frequency of one test per resin batch. If beads are used for extrusion welding, they shall be pre-compounded (mixed with carbon black) prior to use at the site.

Table 9-2.4 – HDPE Extrudate Rod and Bead Testing

Test method	Properties	Specified Values
ASTM D 1505	Specific Gravity	≥ 0.94
ASTM D 1238 Condition E	Melt Index	< 1 g/10 minutes
ASTM D 1603	Carbon Content Black	2 to 3%

9-2-5 FIELD SEAMS

A. Field Seaming Processes

Approved field seaming processes are extrusion welding or fusion (hot wedge) welding.

B. Field Seam Testing Requirements

1. Field seams shall meet the specifications in Table 9-2.5.

Table 9-2.5 – Field Seam Specifications

Laboratory Test Method	Type of Test	Specified Results
ASTM D 6392	Peel Test	i) > 70% of specified liner yield strength ii) film-tear bond (FTB) iii) ductile failure
ASTM D 6392	Shear Test	i) > 90% of specified liner yield strength ii) film-tear bond (FTB) iii) ductile failure
a) Test five specimens first for peel adhesion, and then for shear strength. b) 4 of 5 specimens shall meet or exceed the specified results for the field seam to be considered satisfactory. c) Consider a break at weld sheet interface (adhesion) a non-FTB (failure). d) Consider a break through weld an FTB if break is ductile and if strength is minimum 90% of specified liner yield strength, otherwise break is considered a non-FTB (failure). e) Report individual test results. Average test results are not acceptable. f) Both the inside and the outside tracks of the double fusion weld shall be tested for conformance with these specifications.		

9-3 EXECUTION

9-3-1 GENERAL

- A. Installation of the geomembrane shall be performed by the geomembrane material manufacturer, or a CONTRACTOR (GEOSYNTHETIC) trained and certified by the manufacturer. The purpose of those specifications is to obtain a lined system as free of defects as current installation and inspection techniques allow.
- B. Orient panels to minimize seams under the 4" HDPE perforated leachate collection pipe (lowest elevation of the cell base).

9-3-2 STORAGE, AND HANDLING

- A. O-Site Transportation
 1. CONTRACTOR (GEOSYNTHETIC) is responsible for transporting all geomembrane material on-site without damage.

B. BLANK

C. On-Site Storage

1. Store geomembrane rolls to protect from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat exposure to sunlight, or other damage.
2. Store geomembrane rolls on prepared surface (not on wooden pallets).
3. Stack geomembrane no more than 3 rolls high.
4. The COUNTY shall allocate sufficient space to store geomembrane rolls.

D. On-Site Handling

1. CONTRACTOR (GEOSYNTHETIC) is responsible for handling all geomembrane material on-site.
2. Use appropriate handling equipment to load, move or deploy geomembrane rolls. Appropriate handling equipment includes cloth chokers and spreader bar for loading, spreader and roll bars for deployment.
3. Do not fold or crease geomembrane material.
4. Damage to the geomembrane shall be documented by the CQA MONITOR and CONTRACTOR (GEOSYNTHETIC) .
5. Repair damaged geomembrane to satisfaction of CQA MONITOR.
6. Remove damaged geomembrane and replace with acceptable geomembrane material if damage cannot be satisfactorily repaired.
7. Repairing, removal and replacement of geomembrane shall be at CONTRACTOR (GEOSYNTHETIC) expense if the damage was caused by CONTRACTOR (GEOSYNTHETIC) or CONTRACTOR'S (GEOSYNTHETIC) SUBCONTRACTOR.

9-3-3 SUBGRADE ACCEPTANCE

- A. Prior to commencement of geomembrane installation, the CONTRACTOR (GEOSYNTHETIC) and the CQA MONITOR shall both provide the ENGINEER with a written acceptance of the subgrade surface. Subgrade preparation will be done by a third party (CONTRACTOR (NON-GEOSYNTHETIC)) hired by the COUNTY.
- B. All damage to the subgrade caused by installation of lining, including ruts caused by equipment prior, shall be repaired by CONTRACTOR (GEOSYNTHETIC) at no cost to the COUNTY.

9-3-4 DEPLOYMENT

A. Panel Deployment:

Limit number of panels deployed in one day to number of panels which can be seamed or tack welded on same day.

B. Method of Deployment:

1. Use equipment which will not damage geomembrane during handling and trafficking by any means, including damage due to the leakage of hydrocarbons from equipment.
2. Do not allow personnel or survey crew working on geomembrane to wear shoes that could damage the geomembrane, or engage in activities that could result in damage to the geomembrane.
3. Round or smooth sharp corners of clamps and other metal tools and pad them. All knives shall be equipped with hook blades and no cuts shall be made without protecting adjacent liners.
4. Unroll panels in such a way that geomembrane is protected at all times from being scratched, crimped, or damaged by the underlying soil surface.
5. Minimize wrinkles, especially differential wrinkles between adjacent panels, and fishmouths in order to create a smooth surface for placement of subsequent layers.
6. Use temporary anchors that will not damage geomembrane, and that will not leave debris on the liner after their removal.
7. Use continuous anchors along perimeter to minimize risk of wind flow under panels and place adequate anchors in the interior of panel to further minimize the effects of wind.
8. Minimize direct contact of personnel and geomembrane and or equipment and geomembrane.
9. Protect geomembrane in heavy traffic areas by using extra layers of geotextile, geomembrane or other suitable materials.
10. Do not allow vehicle traffic over geomembrane.
11. The geomembrane surface shall be kept clean of all dirt and debris.

C. Imperfections

1. Visually inspect geomembrane sheet surface during unrolling and mark faulty or suspect areas for repair or testing. (Attention is directed to Section 9-2.2 "Geomembrane Rolls", Paragraph A4.

2. Replace unsatisfactory geomembrane stock (that which requires more than one patch per 5,000 square feet) and remove unsatisfactory geomembrane stock immediately from the job site, at no cost to the COUNTY.

D. Weather Conditions

1. Deploy geomembrane between ambient air temperatures of 40°F to 105°F.
2. Ambient air temperature shall be measured 6 inches above geomembrane surface.
3. Deploying geomembrane below 40°F or above 105°F may be allowed only after it has been verified that the material can be seamed according to the specifications and only after approval by the CQA MONITOR.
4. Do not deploy geomembrane during precipitation, in the presence of excessive moisture, in areas of ponded water, or in the presence of excessive winds.

9-3-5 FIELD SEAMING

A. Seam Layout

1. Orient seams parallel to line of maximum slope, i.e., orient seams down the slope, not across the slope.
2. Minimize number of field seams in corners, trenches, odd-shaped geometric locations and outside corners.
3. Keep base of toe (horizontal) seams at least 10 feet away from toe of slope.
4. Use seam numbering system compatible with panel numbering system.

B. Requirements for Seaming Personnel

1. Qualify personnel performing seaming operations by experience (more than 500,000 square feet of seaming experience) and by successfully passing seaming test.
2. Provide list of proposed qualified seaming personnel including their seaming experience record for COUNTY approval.
3. Provide at least one seamer (Master Seamer) who has experience seaming over five million square feet of geomembrane using same type of seaming apparatus to be used at the site.
4. Master Seamer shall provide direct supervision over qualified seamers.

C. Requirements for Seam Overlap

1. Overlap panels a minimum of 4 inches for fusion welding and 3 inches for extrusion welding.
2. Use procedures to temporarily bond adjacent overlapping panels together that do not damage geomembrane and are not detrimental to seam weld material.
3. Do not use solvent and adhesive unless product is approved in writing by the geomembrane supplier and approved by the ENGINEER.
4. Bevel edges of geomembrane before extrusion welding.
5. Do not use adhesives for temporary bonding.
6. Provide continuous tacking where overlay in repair exceeds 0.5-inch.

D. Seam Preparation

1. Clean surfaces of liner to be seamed of grease, moisture, dust, dirt, debris or other foreign material immediately prior to seaming.
2. Clean surface of oxidation by disc grinder or equivalent not more than 1 hour before extrusion welding.
3. Use number 80 grit sandpaper for disc grinder. Bevel seam edges and grind perpendicular to the seam.
4. Patch area where grinding reduces sheet thickness by more than 4 mils.
5. Cover with single extrudate bead any grooves, caused by grinding, that could become channel leaks.
6. Grind liner surface no more than 1/4 inch beyond weld head, and grind perpendicular to the seam.
7. Use soft bristle brush after grinding if brushing is required.
8. Do not use wire brush after grinding.
9. Cut wrinkles and "fishmouths" along ridge.
10. Overlap and seam wrinkles and "fishmouths".
11. Patch wrinkles and "fishmouths" where overlap is less than 3 inches.
12. Use firm, dry substrate (piece of geomembrane or other material) directly under seam overlap where subgrade is soft.

13. Use plywood or other firm material under seam overlap when welding over anchor trench.

E. Seaming Equipment and Accessories

1. Maintain at least one spare operable seaming apparatus for each three seaming teams.
2. Place protecting fabric or piece of geomembrane beneath hot welding apparatus when resting on geomembrane lining.
3. Use electric generator capable of providing constant voltage under combined line loads.
4. Locate electric generator off of liner.
5. Provide protective lining and splash pad large enough to catch spilled fuel under electric generator.
6. Equip welding apparatus with gauges giving temperatures in apparatus and at nozzle.

F. Extrusion Welding

1. Purge welding apparatus of heat-degraded extrudate for at least 1 minute before welding if extruder is stopped for longer than 3 minutes.
2. Inspect each extruder shoe daily to assure that its offset is same as liner thickness.
3. Repair or replace extruder shoes, damaged or misaligned armature brushes, nozzle contamination or other worn or damaged parts.
4. Inspect extruder shoes each day for wear.
5. Every 2 hours log extrudate temperatures in barrel and at nozzle and ambient temperature measured 6 inches above geomembrane surface.
6. Avoid stop-start welding.
7. Grind existing weld 2 inches back from point of stoppage or 2 inches each side of vacuum leak before welding.
8. Restart welding 2 inches back from point of stoppage and weld 2 inches each side of vacuum leak.
9. Remove extrudate rod from welder when not using welder for long period (over 2 hours).
10. No equipment is allowed to commence welding on liner until field test sample, made by that equipment, passes weld test.

G. Hot Wedge Welding

1. Welding apparatus must be automated vehicular mounted devices equipped with gages giving applicable temperatures and speed.
2. Grind edge of cross seams to smooth incline (top and bottom) prior to welding.
3. Place smooth insulating plate or fabric beneath hot welding apparatus after usage.
4. Protect against moisture buildup between sheets.
5. No equipment or personnel are allowed to commence welding on the liner until a field test sample made by that equipment and seaming technician have passed the trial weld tests.

H. Weather Conditions

1. Provide preheating by hot air device 1 inch in front of extruder when ambient air temperature is below 40°F.

I. Test Seams

1. Conduct field test seams on pieces of geomembrane liner to verify adequate seaming conditions.
2. Conduct field test seams:
 - at beginning of each seaming period
 - at least once for each four seaming hours
 - at CQA MONITOR's discretion
 - for each seaming apparatus used
 - at least once per shift for each welding
 - for each person performing seaming
3. Make test seam at area of seaming and in contact with subgrade (same condition as the liner to be seamed).
4. Make test seam sample at least 3 feet long and 11 inches wide with the seam centered lengthwise.
5. Cut two 1-inch wide specimens from each end of the test seam (4 samples).
6. Test two specimens for peel strength and then two for shear strength using a field tensiometer.

7. A specimen passes when it meets the specifications shown in Table 9-2.5 "Field Seam Specifications."
8. A test seam sample passes when all specimens have passing results in peel strength and shear strength.
9. Repeat the test in its entirety when any of the specimens fails in either peel adhesion or shear strength.
10. When a test seam fails, do not use the seaming apparatus and the seamer for welding until deficiencies in the seaming are corrected and two consecutive successful field test seams are achieved.
11. Cut specimens with a 1-inch width and clamp at a 90° angle in the tensiometer.

9-3-6 CONTINUITY TESTING

A. Non-destructive Seam Testing

1. Test all extrusion or single wedge field welds over their full length using vacuum test units.
2. Perform vacuum test concurrently with seaming work progress, not at completion of field seaming.

B. Equipment and Accessories for Vacuum Test

1. Vacuum box assembly consisting of:
 - rigid housing
 - transparent viewing window
 - soft rubber gasket attached to bottom of housing
 - porthole or valve assembly
 - vacuum gage
1. Vacuum pump and tank receiver equipped with pressure controller and pipe connections.
2. Rubber pressure/vacuum hose with fittings and connections.
3. Clean, dry, soft rags.
4. Plastic bucket and applicator.
5. Water and detergent to produce soapy solution.

C. Procedure for Vacuum Testing

1. Clean window, gasket surfaces and check for leaks.
2. Energize vacuum pump and reduce tank pressure to approximately 5 psi.
3. Wet a strip of geomembrane seam approximately 12 inches by 30 inches (length of box) with soapy solution.
4. Place box over wetted area and compress.
5. Close bleed valve and open vacuum valve.
6. Ensure that a leak tight seal is created.
7. For the period of not less than 15 seconds, examine length of weld through viewing window for presence of soap bubbles.
8. If no bubbles appear after 15 seconds, close vacuum valve and open bleed valve, move box over next adjoining area with minimum 3 inches overlap and repeat process.
9. Areas where soap bubbles appear shall be marked, repaired and retested.

D. Air Pressure Testing (for Double Hot Wedge Seam Only)

1. Equipment shall be comprised of:
 - air pumps equipped with pressure gauge capable of generating and sustaining a pressure between 25 to 30 psi and mounted on cushion to protect geomembranes.
 - rubber hose with fittings and connections.
 - sharp hollow needle or other pressure feed device approved by CQA MONITOR.
2. Seal both ends of seam to be tested.
3. Insert needle or other approved pressure feed device into tunnel created by double hot wedge seaming.
4. Insert protective cushion between air pump and geomembrane.
5. Energize air pump to proper pressure, close valve, and sustain pressure for minimum 5 minutes.
6. If loss of pressure exceeds 2 psi or does not stabilize, locate faulty area and repair.
7. Open opposite end of air channel and observe loss of pressure. If pressure loss does not occur, trace location of blockage, and retest.

8. Remove approved pressure feed device and seal.

9-3-7 DESTRUCTIVE SEAM TESTING

- A. Destructive seam tests shall be performed on all seams. Testing shall be performed by the CQA MONITOR.
- B. Provide CQA MONITOR with minimum of one destructive sample (field and laboratory) per a minimum of 1000 linear feet of seam length. Frequency of sample locations may be increased at the discretion of the CQA MONITOR.
- C. Location shall be selected by CQA MONITOR and CONTRACTOR (GEOSYNTHETIC) shall not be informed in advance of sample location.
- D. Visually observe, mark and repair suspicious looking welds before release of a section to CQA MONITOR for destructive sample marking.
- E. Cut samples as seaming and non-destructive testing progresses prior to completion of liner installation, and in such manner as to not damage underlying liners.
- F. Size of destructive samples:
 1. Field tests: Two (2) samples on each side, 1-inch wide by 12 inches long with the seam centered across the length, 42 inches apart. These samples shall be tested using a field tensiometer to determine peel and shear strengths. A specimen passes when it meets the specifications shown in Table 9-2.5 "Field Seam Specifications."
 2. Laboratory tests: Twelve (12) inches wide by 42 inches long with the seam centered along the length. Cut sample into three parts; 1) 12 inch by 12 inch for the CONTRACTOR (GEOSYNTHETIC), 2) 12 inch by 18 inch for the independent testing laboratory, and 3) 12 inch by 12 inch for the COUNTY to archive. Once the Field samples have passed, the 12 inch by 18 inch sample shall be sent to the independent testing laboratory and tested for seam properties specified in Section 9-2.5, "Field Seams." These samples may be tested in the field laboratory at the discretion of the ENGINEER.
- G. Mark samples with consecutive numbering and location seam number.
- H. Record in written form the date, time, location, roll seam number, ambient temperature, seaming unit number, name of seamer, welding apparatus temperatures, and pass or fail description.
- I. Immediately repair holes in geomembrane resulting from obtaining destructive samples.
- J. Vacuum test repaired areas where destructive samples were taken.

9-3-8 PROCEDURES FOLLOWING A DESTRUCTIVE SEAM TEST FAILURE

- A. If any of the field tests fail, retrace welding path a minimum of 10 feet in both directions from the failed test location and cut, at these locations, two (2) samples on each side, 1 inch wide by 12 inches long spaced 42 inches apart.
- B. Give samples to CQA MONITOR for additional field testing.
- C. Repeat process if additional test fails. When field tests pass, laboratory samples shall be obtained as described in Section 9-3.7, paragraph F.2 .
- D. After the laboratory tests have been approved, reconstruct seam between passing test locations to satisfaction of CQA MONITOR.
- E. Reconstruction may be one of the following:
 - a) cut out old seam, reposition panel and reseam
 - b) add cap strip
- F. Cut additional destructive samples from reconstruction at discretion of CQA MONITOR.
- G. If additional destructive sample results are not acceptable, repeat process until reconstructed seam is judged satisfactory by CQA MONITOR.
- H. Laboratory destructive test results are the basis of seam acceptance. Passing field test samples shall not be the basis for seam acceptance unless authorized by the ENGINEER.

9-3-9 INSPECTION

- A. Inspect seams and surface of the geomembrane for defects, holes, blisters, undispersed raw materials and signs of contamination by foreign matter.
- B. Brush, blow or wash geomembrane surface if dirt inhibits inspection.
- C. CQA MONITOR shall decide if cleaning of geomembrane surface and welds is needed to facilitate inspection.
- D. Distinctively mark repair areas and indicate required type of repair.

9-3-10 REPAIRS

- A. Holes Smaller than 1/4 Inch
 - 1. Repair by extrusion bead weld.
 - 2. Grind surface of geomembrane minimum 1 inch before and minimum 1 inch beyond and around hole immediately before welding.
 - 3. Vacuum test after weld.
 - 4. Mark result of test, date of test and name of tester on the membrane.

- B. Holes Larger than 1/4 Inch
 - 1. Repair with patch or cap.
 - 2. Place patch as described in section 9-3.10, paragraph E.
 - 3. Vacuum test after weld.
 - 4. Mark result of test, date of test, and name of tester on the membrane.
- C. Tears
 - 1. Repair with patch.
 - 2. Round ends of tears prior to patching.
 - 3. Place patch as described in section 9-3.10, paragraph E.
 - 4. Vacuum test after weld.
 - 5. Mark result of test, date of test, and name of tester on the membrane.
- D. Blisters, Undispersed Raw Materials and Contamination by Foreign Matter
 - 1. Repair with patch or extrusion bead weld, depending on size, as determined by CQA MONITOR.
 - 2. Grind surface of geomembrane minimum 1 inch before and minimum 1 inch beyond and around hole immediately before extrusion bead welding.
 - 3. Vacuum test after weld.
 - 4. Mark result of test, date of test, and name of tester on the membrane.
- E. Patches
 - 1. Must be round or oval in shape.
 - 2. Must be made of same material as geomembrane to be patched.
 - 3. Must extend minimum of 6 inches beyond edge of defects.
 - 4. Must be minimum 13 inches in diameter.
 - 5. Must have beveled edges.
 - 6. Do not cut patch with repair sheet in contact with geomembrane.
 - 7. Must be welded to geomembrane with extrusion methods.
 - 8. Vacuum test after patching.
 - 9. Mark result of test, date of test, and name of tester on the membrane.
- F. Documentation of Repairs
 - 1. Provide daily documentation of non-destructive and destructive testing to the CQA MONITOR.
 - 2. Documentation shall identify seams that initially failed testing and include evidence that these seams were repaired and retested successfully.

9-3-11 BACKFILLING

- A. Backfilling of the liner or liner anchor trench shall occur when the geomembrane is in its most contracted state, in the morning or under over-cast skies by CONTRACTOR (NON-GEOSYNTHETIC). Geomembrane at the toe of the slope which is not fully supported by the subgrade is unsatisfactory.

9-3-12 ACCEPTANCE

A. Geomembrane Ownership

The CONTRACTOR (GEOSYNTHETIC) shall retain ownership and responsibility for geomembrane until acceptance by the COUNTY upon completion of all Contract Work.

B. Geomembrane Acceptance

The COUNTY shall accept geomembrane installation when the following conditions are met:

1. Geomembrane installation is finished.
2. Verification of adequacy of field seams and repairs, including associated testing is complete.
3. Certifications, including record (as-built) drawings, are provided to the COUNTY.
4. "Walkthrough" (defined below in Section 9-3.12C) is carried out to the COUNTY's satisfaction.
5. Construction area is cleaned of remnant pieces of geomembrane, debris, and garbage.
6. All Contract Work is complete

C. Walkthrough

A walkthrough shall be conducted for the 60-mil HDPE geomembrane installations in accordance with the following procedure:

1. Inform CQA MONITOR and ENGINEER of readiness for walkthrough when each geomembrane installation is finished.
2. In certain cases and with the ENGINEER's approval, a section of installation may be released for walkthrough.
3. Execute walkthrough with the ENGINEER and the CQA MONITOR.
4. The ENGINEER may delegate walkthrough responsibility.

5. Visually inspect seams, panel surface, and repairs during walkthrough.
6. Distinctively mark defects, suspicious looking welds, permanent wrinkles and bridging for repair.
7. Document findings and corrective actions.
8. Arrange for final walkthrough after corrective actions.
9. Document result of final walkthrough.

9-3-13 PROTECTION

Any damage that occurs to the completed geomembrane prior to acceptance of the work shall be repaired as described in Section 9-3.10 to the required conditions and acceptance criteria. Traffic shall not be allowed on the completed 60-mil HDPE primary and secondary containment (double lined area – see Drawings page P1) geomembrane and leak detection geocomposite until a minimum of two (2') foot layer of woodchip layer has been placed. The storage or stockpiling of geomembrane materials or fill materials on the completed geomembrane shall not be permitted.

9-4 MEASUREMENT AND PAYMENT

9-4-1 MEASUREMENT

- A. The unit of measurement for installing “60-mil Double-Textured HDPE Geomembrane”, Bid Item 2, shall be the square foot of actual surface area of geomembrane placed within the limits shown on the Plans, tested and accepted. Geomembrane seam overlap shall not be included in the measurement of actual surface area. The quantity for the “60-mil Double-Textured HDPE Geomembrane” shall be the square foot measured by GPS survey.

9-4-2 PAYMENT

- A. Payment for the “60-mil Double-Textured HDPE Geomembrane”, Bid Item 2, includes all costs to install the HDPE geomembrane as described in this Section, and as shown on the Construction Drawings.
- B. Payment also includes all items incidental to the Work including but not limited to:
1. Material samples, sampling, and testing.
 2. Layout surveying.
 3. Rejected material removal, re-testing, handling, and repair.
 4. Clean up.
 5. Mobilization and demobilization.

SECTION 10 - FABRIC-ENCASED GEOSYNTHETIC CLAY LINER

10-1 GENERAL

10-1-1 SECTION INCLUDES

- A. Section includes furnishing and installing fabric-encased geosynthetic clay liner (GCL) for the penetration boots.

10-1-2 RELATED SECTIONS

- A. SECTION 7 - DRAINAGE GEOCOMPOSITE

10-1-3 REFERENCES

- A. ASTM D422 — Standard Test Method for Particle-Size Analysis of Soil.
- B. ASTM D1004 — Standard Test Method for Initial Tear Resistance of Plastic Film or Sheeting.
- C. ASTM D2216 — Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-aggregate Mixtures.
- D. ASTM D4354 — Standard Practice for Sampling of Geosynthetics for Testing.
- E. ASTM D4632 — Standard Test Method for Breaking Load and Elongation of Geotextiles.
- F. ASTM D4643 — Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method.
- G. ASTM D4759 — Standard Practice for Determining the Specification Conformance of Geosynthetics.
- H. ASTM D4873 — Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
- I. ASTM D5199 — Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
- J. ASTM D5261 — Standard Test Method for Measuring Mass Per Unit Area of Geotextiles.
- K. ASTM D5887 — Standard Test Method for Measurement of Index Flux Through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter.
- L. ASTM D5888 — Standard Guide for Storage and Handling of Geosynthetic Clay Liners.

- M. ASTM D5890 — Standard Test Method for Swell Index of Clay Mineral Component of Geosynthetic Clay Liners.
- N. ASTM D5891 — Standard Test Method for Fluid Loss of Clay Components of Geosynthetic Clay Liners.
- O. ASTM D5993 — Standard Test Method for Measuring Mass per Unit of Geosynthetic Clay Liners.
- P. ASTM D6243 — Standard Test Method for Determining the Internal and Interface Shear Resistance of Geosynthetic Clay Liner by the Direct Shear Method.
- Q. ASTM D6693 — Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.

10-1-4 DEFINITIONS

- A. Bentonite: Clay soil, comprised primarily of sodium montmorillonite, characterized by high-swelling potential and low-hydraulic conductivity.
- B. Construction Quality Assurance Consultant (CQAC): The party, independent from MANUFACTURER or CONTRACTOR (GEOSYNTHETIC), that is responsible for observing and documenting activities related to the quality assurance of production and installation of the geosynthetic components of the lining system.
- C. Construction Quality Assurance (CQA) Laboratory: The party, independent from the COUNTY, MANUFACTURER, Fabricator, and CONTRACTOR (GEOSYNTHETIC), responsible for conducting tests on samples of geosynthetics obtained at the site.
- D. Construction Quality Assurance (CQA) INSPECTOR: The site representative of the CQAC.
- E. Geomembrane: An essentially thin impermeable synthetic membrane used as a solid or liquid barrier. Synonymous term for flexible membrane liner (FML).
- F. Fabric-Encased Geosynthetic Clay Liner (GCL): Relatively thin factory-manufactured liner material consisting of bentonite supported by textile backing (fabric-encased) held together by needle punching.
- G. CONTRACTOR (GEOSYNTHETIC): The party responsible for field handling, transporting, storing, deploying, and temporary restraining (against wind), and protection against water damage, of the GCL.
- H. Lot: Group of consecutively numbered rolls from the same manufacturing line.
- I. GCL MANUFACTURER (MANUFACTURER): The party responsible for the production and quality of GCL.

- J. Minimum Average Roll Value (MARV): Minimum value of a limited series of tests that represents a value two standard deviations lower than the overall average value. Ninety-five percent of any individual samples will have values greater than the MARV for any given property.
- K. Textile Backing (textile or geotextile): Geosynthetic support material consisting of woven slit film, needle-punched nonwoven, or spunlaced polymer fabric, used for supporting bentonite in a GCL.

10-1-5 PRE-CONSTRUCTION SUBMITTALS

- A. Product Data (MANUFACTURER): Submit the following within 15 days after the issuance of the Notice to Proceed.
 - 1. Textile Backing:
 - a Certification stating that the textiles meet the product requirements (Table 10-1).
 - b Copy of quality control tests performed by textile supplier (if different from GCL MANUFACTURER).
 - c Copy of quality control tests performed by GCL MANUFACTURER.
 - 2. Bentonite:
 - a Certification stating that the bentonite meets the product requirements (Table 10-1).
 - b Copy of quality control tests performed by bentonite supplier.
 - c Copy of quality control tests performed by GCL MANUFACTURER.
 - 3. GCL:
 - a Certification stating that the GCL meets the product requirements (Table 10-1).
 - b Copy of quality control tests performed by GCL MANUFACTURER.
 - c Permeability testing on typical product by independent laboratory (not necessarily for product delivered to site).
 - d The CONTRACTOR (GEOSYNTHETIC) shall submit a certificate of compliance for the GCL to the ENGINEER for approval at least 7 days prior to shipping material.
 - 4. Qualifications CONTRACTOR (GEOSYNTHETIC) :
 - a Submit, two weeks prior to installation, CONTRACTOR (GEOSYNTHETIC), resume of installation supervisor/field ENGINEER to be assigned to the project, and list of projects completed that involved GCLs.
 - 5. Quality Control Plan and Installation Procedures (MANUFACTURER):

- a Submit, two weeks prior to installation, copy of MANUFACTURER's quality control plan including list of quality control tests performed and typical testing frequencies.
- b Submit, two weeks prior to installation, recommended installation procedures.
- c Submit, upon completion of the installation, MANUFACTURER's product warranty against MANUFACTURER defects (material not in compliance with this specification). The warranty shall cover the full material replacement cost not including installation.

10-1-6 QUALIFICATIONS

- A. Product shall be obtained from a MANUFACTURER listed in Section 10.2.1 or a MANUFACTURER-approved distributor.
- B. CONTRACTOR (GEOSYNTHETIC) shall meet the following requirements:
 1. Have experience in similar capacity involving GCLs on at least 2 landfill projects and have installed a minimum of 500,000 square feet of GCL.

10-1-7 DELIVERY, STORAGE, AND HANDLING

- A. General: Conform to the MANUFACTURER's requirements and ASTM D5888 unless otherwise specified.
- B. Delivery:
 1. Deliver materials to the site only after the CQA INSPECTOR accepts required submittals.
 2. Material shall be covered with a waterproof, tightly fitting, plastic covering resistant to ultraviolet degradation.
 3. Ship less than one month prior to scheduled installation.
 4. Each roll shall be marked with the following information:
 - a MANUFACTURER's name.
 - b Product identification.
 - c Lot and roll numbers.
 - d Roll dimensions and weight.
- C. Storage:
 1. Store rolls in space allocated by the ENGINEER. Space should be at high-ground level or elevated aboveground surface. Follow storage procedures outlined in ASTM D-5888.
 2. Stack no more than 3 rolls high.

3. Protect rolls from precipitation, mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.
4. Preserve integrity and readability of roll labels.

D. Handling:

1. Use appropriate handling equipment following MANUFACTURER's recommendations to load, move, or deploy GCL rolls.
2. Handling of rolls shall be done in a competent manner such that damage does not occur to the product or to its protective wrapping. Follow handling procedures outlined in ASTM D-5888.
3. Damage to protective covering due to mishandling or sampling must be repaired immediately. Repairs shall be such that the GCL roll is protected from moisture or other deleterious conditions.
4. CONTRACTOR (GEOSYNTHETIC) is responsible for off-loading, storage, and transporting material from storage area to installation site.

10-2 PRODUCTS

10-2-1 MANUFACTURER

- A. The name, address, and telephone number of approved MANUFACTURERS are given below:
 1. Colloid Environmental Technologies Company (CETCO), 1500 West Shure Drive, Arlington Heights, IL 60004, (800) 527-9948.
 2. GSE, 19103 Gundle Road, Houston, TX 77073, (800) 435-2008.
- B. Material may be provided by a different office than shown above or by a MANUFACTURER-approved distributor.
- C. Products other than those shown above may be used only with written pre-bid authorization from the ENGINEER.

10-2-2 BENTONITE

- A. Supplied in granular form.
- B. Meet the requirements of Table 10-1.

10-2-3 GEOTEXTILE BACKING

- A. Geotextile shall be needle-punched non-woven on both sides.
- B. Meet the requirements of Table 10-1.

10-2-4 GCL

- A. Consists of bentonite encapsulated by two non-woven geotextiles, (Bentomat DN or Bentofix /// as manufactured by CETCO or GSE, respectively) or other suitable material approved by the ENGINEER.
- B. Continuous waterproof laplines and matchlines shall be printed directly on the geotextile-type GCL at 6 and 12 inches from the edges of the rolls, respectively.
- C. Wrapped around structurally sound core that can support weight of GCL without excessive bending or buckling. The core shall be accessible to stingers or rods placed full-length within the core.
 - 1. Geotextiles shall be needle-punched or lock-stitched together through the bentonite layer to form a stable composite. Adhesives may be used in addition to, but not in lieu of, needle-punching, or lock-stitching.
 - 2. Continuously inspected for presence of needles and certified to be "needle-free".
- D. Meet the requirements of Table 10-1.

10-2-5 MANUFACTURER SOURCE QUALITY CONTROL

- A. Perform the quality control tests at the frequencies shown on Table 10-2.
- B. Supply copies of testing to the ENGINEER.

10-3 EXECUTION

10-3-1 DEPLOYMENT

- A. General:
 - 1. Take care not to entrap objects or moisture beneath GCL.

10-3-2 JOINING

- A. Overlaps/Seams:
 - 1. Spread loose bentonite or bentonite paste at the rate of 4 ounces per lineal foot of overlap. Bentonite along overlaps is not required if MANUFACTURER provides an alternative method that is demonstrated to achieve a permeability at the overlaps that is no greater than the permeability of the GCL material. Approval to forego the use of additional bentonite along seams must be received in writing from the ENGINEER before installation begins.
 - 2. Bentonite shall be same material used in the GCL.

Table 10-1 PROPERTIES FOR GEOSYNTHETIC CLAY LINER

TEST	TEST DESIGNATION ⁽¹⁾	REQUIREMENT
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TEST	TEST DESIGNATION ⁽¹⁾	REQUIREMENT
Bentonite		
Clay Content	Ather 1983/X-Ray Diff.	>70% / >90% sodium Bentonite
Free Swell	ASTM D5890	>25 ml / 2 g
Moisture Content	ASTM D2216	<10%
Fluid Loss	ASTM D5891	<18 ml
Geotextile ⁽²⁾		
Mass Per Unit Area	ASTM D5261	>6.0 oz/yds
Grab Strength	ASTM D4632	>70 lbs ⁽³⁾
GCL ⁽²⁾		
Thickness	ASTM D1777	>0.2 in.
Dried Clay Mass Per Unit Area	ASTM D5993	>0.75 lbs/sf ⁽⁴⁾
Moisture Content	ASTM D2216	<10%
Grab Strength	ASTM D4632	>90 lbs
Permeability (Index Flux)	ASTM D5887	<1 x 10 ⁻⁸ m ² /m/sec ⁽⁵⁾
Peel Strength	ASTM D4632	>5 ppi
Notes: (1) Alternate tests are allowed only with prior written approval of ENGINEER. (2) Required values for geotextile and GCL are MARV. (3) Measured in both directions. (4) Weight of GCL minus weight of geotextiles and corrected to 0 percent bentonite moisture content. (5) Measured under 5 psi confining pressure and 2 psi head pressure.		

Table 10-2 MANUFACTURER'S TESTING FOR GEOSYNTHETIC CLAY LINER

TEST	FREQUENCY ⁽¹⁾
Bentonite ⁽²⁾	
Clay Content	1 per 50,000 sf
Free Swell	1 per truck or railcar, 1/50,000 kg minutes
Moisture Content	1 per 50,000 sf
Fluid Loss	1 per truck or railcar, 1/50,000 kg minutes
Geotextile	
Mass Per Unit Area	1 per 200,000 sf
Grab Strength	1 per 200,000 sf
GCL	
Thickness	1 per 10,000 sf
Dried Clay Mass Per Unit Area	1 per 40,000 sf
Moisture Content	1 per 40,000 sf
Grab Strength	1 per 200,000 sf
Permeability (Index Flux)	Once weekly or 1 per 500,000 sf ⁽³⁾
Peel Strength	1 per 200,000 sf
Notes: (1) One test per quantity indicated; minimum one test per lot unless otherwise noted. (2) Frequencies based on material with ten percent moisture content. (3) Whichever results in the greater number of tests.	

10-3-3 RESTRAINING AND PROTECTING

- A. GCL must be covered with geomembrane the day it is installed. If overlying geomembrane is not seamed the same day, the ENGINEER may request geomembrane edges to be pulled back to inspect GCL at no additional cost to COUNTY. Torn, punctured, or hydrated material shall be removed and replaced in accordance with Section 10.3.5 at no additional cost to COUNTY.
- B. The bentonite material that becomes hydrated to a moisture content greater than 40 percent before being covered by a seamed geomembrane will be rejected. Rejected material shall be removed and replaced at no additional cost to the COUNTY.

10-3-4 REPAIR PROCEDURES

- A. Remove punctured, torn, or hydrated material.
- B. Cover area with same type of GCL material with same side up.
- C. Overlap defective area by a minimum of 12 inches in all directions.

- D. Adhesion tape or heat fusion (leister) bonding may be used to keep patch in place.
- E. Apply loose bentonite as with normal overlaps at 4 ounces per linear foot.

10-3-5 QUALITY CONTROL

- A. Quality control is the responsibility of the MANUFACTURER and CONTRACTOR (GEOSYNTHETIC) who must document that the materials and installation proceeds in accordance with the Specifications.
- B. Quality control testing shall be performed on the GCL by the MANUFACTURER in accordance with Tables 10-1 and 10-2.
- C. The CONTRACTOR (GEOSYNTHETIC) and CQA INSPECTOR shall inspect:
 - 1. The underlying surface for entrapped particles that may impact the GCL.
 - 2. The surface of the GCL for needles, punctures, tears, thinning, or other evidence that the material may not meet specification requirements.
 - 3. The GCL for evidence of premature hydration such as wet areas or swelling. Hydrated areas shall be removed and replaced with unhydrated material.
 - 4. Overlaps using the laplines and matchlines as a guide. The CQA INSPECTOR shall periodically measure the distance of the laplines and matchlines from the edge of the GCL.
 - 5. The bentonite seam (if necessary) to check the location of the seams over the overlap and the amount of bentonite being used.
 - 6. The CQA INSPECTOR must approve each section of the GCL before the GCL is covered.

10-3-6 QUALITY ASSURANCE

- A. The COUNTY will engage and pay for the services of a CQA Consultant (CQAC) and a CQA Laboratory for Inspecting the quality and installation of the GCL unless otherwise specified.
- B. The MANUFACTURER shall not charge any time or material expenses to the COUNTY, related to a plant visit during manufacturing.
- C. The CONTRACTOR (GEOSYNTHETIC) shall aid the CQA INSPECTOR in product sampling by providing personnel and equipment necessary to move, cut, and protect GCL rolls.
- D. Quality assurance testing shall be performed on the GCL by the CQA laboratory prior to installation in accordance with the CQA Plan. The CONTRACTOR (GEOSYNTHETIC) shall aid the ENGINEER in collecting samples for testing.

10-3-7 ACCEPTANCE

- A. CONTRACTOR (GEOSYNTHETIC) shall retain ownership and responsibility of GCL until acceptance by the COUNTY.
- B. COUNTY will accept GCL installation when:
 - 1. All required documentation from the MANUFACTURER and CONTRACTOR (GEOSYNTHETIC) has been received and accepted.
 - 2. Test reports verifying material properties have been received and accepted.
 - 3. The ENGINEER has completed final inspection and any noted defects have been repaired.
 - 4. The Yolo County Board of Supervisors accepts the project as complete.

10-4 MEASUREMENT AND PAYMENT

10-4-1 MEASUREMENT

- A. There shall be no separate measurement for GCL. Measurement for GCL shall be included in the cost of the Leak Detection Sump, Bid Item 3.

10-4-2 PAYMENT

- A. Payment for the GCL as part of the Leak Detection Sump is covered Leak Detection Sump, Bid Item 3. The Work includes all costs to manufacture, test, purchase, transport, install, and maintain the GCL through completion of the Work as described in this Section, and as shown on the Construction Drawings.
- B. Payment also includes all items incidental to the Work including but not limited to:
 - 1. Material samples, sampling, and testing.
 - 2. Layout surveying.
 - 3. Rejected material removal, re-testing, handling, and repair.
 - 4. Clean up.
 - 5. Mobilization and demobilization.

SECTION 11 - LEFT INTENTIONALLY BLANK

SECTION 12 - LEAK DETECTION SUMP

12-1 GENERAL

12-1-1 SECTION INCLUDES

- A. Furnishing all labor, equipment, and materials not supplied by the COUNTY; necessary for installing the leak detection sump in accordance with Specification and the Construction Drawings.
- B. Removal of existing concrete around pipes, removal of compacted soil around pipes, removal of litter, trash or other unsuitable material as directed by CQA shall be performed by a third party CONTRACTOR (NON-GEOSYNTHETIC) hired under a separate contract with the COUNTY.
- C. Installation of prefabricated pipe boots, GCL, geocomposite, geomembrane, all other incidental items related to leak detection sumps needed for the Leachate Detection Sump as shown on Drawings.
- D. Placement of soil in sump area, moisture conditioning of soil, hand compaction of soil, installation of HDPE pipes, extension of existing HDPE pipes, pipe fittings, placement of gravel, placement of sand, finish grade, and steel drum roll to smooth and unyielding surface will be handled by a third party CONTRACTOR (NON-GEOSYNTHETIC) hired under a separate contract with the COUNTY.

12-1-2 RELATED SECTIONS

- A. RELATED SECTIONS
- B. SECTION 2 – MOBILIZATION/DEMOBILIZATION
- C. SECTION 7 – DRAINAGE GEOCOMPOSITE
- D. SECTION 8 – HDPE BOOT AND SPARK TESTING
- E. SECTION 9 – HDPE GEOMEMBRANE
- F. SECTION 10 – FABRIC-ENCASED GEOSYNTHETIC CLAY LINER

12-1-3 REFERENCES

NOT USED

12-1-4 SUBMITTALS

- A. Submit installation schedule one week prior to installation

12-2 PRODUCTS

12-2-1 HDPE PIPE (COUNTY'S RESPONSIBILITY WHEN ORDERING HDPE PIPE)

- A. Pipe diameters and SDRs are as shown on the Plans.
- B. The piping will be comprised of new, first quality HDPE material.
- C. Perforated HDPE pipe will be predrilled to the hole size and spacing shown on the Plans.
- D. The HDPE pipe will be tested and certified and by the manufacturer to meet the specifications in Table 11-2.1.

Table 17-2.1 – HDPE Pipe Specifications

Test Method	Property	Specified Value
ASTM D 1248	Material Classification	HDPE Type III, Class C Category 5, Grade P34
ASTM D 3350	Cell Classification	355434C or 345434C or equivalent
ASTM D 1505	Density	Minimum 0.95 g/cm ³
ASTM D 1238	Melt Flow	< 1.5 g/10 min. @21.6 kg
ASTM D 1603	Carbon Black Content	2-3%

- E. The manufacturer will certify that any additives used in the manufacture of pipe have been successfully used in the past, and will state to what extent.

12-2-2 FITTINGS (COUNTY'S RESPONSIBILITY WHEN ORDERING HDPE FITTINGS)

- A. Unless otherwise approved by the ENGINEER or indicated on the plans, fittings shall be butt fusion type, meeting the requirements of ASTM D 3261. All fittings shall have the same SDR and shall be rated to match the system piping to which they are fused. At the point of fusion, the outside diameter and minimum wall thickness shall meet the specifications of ASTM F 714 for the same size of pipe.

12-2-3 SAND BEDDING (COUNTY'S RESPONSIBILITY WHEN ORDERING SAND)

- A. Sand bedding will be obtained from off-site sources. Sand will be free of clay or organic material, suitable for the purpose intended, and will have a minimum of

90 percent passing the No. 4 Standard sieve and a maximum of 5 percent passing the No. 200 sieve.

12-2-4 Gravel Fill (COUNTY'S RESPONSIBILITY WHEN ORDERING GRAVEL)

- A. Gravel fill will be obtained from off-site sources. Gravel fill shall be washed, hard, rounded to subrounded material with a minimum particle size of 3/4" inches and a maximum particle size of 2 inches. Gravel fill shall contain less than 2 percent material which will pass the No. 200 standard sieve. Gravel fill shall contain no limestone or other material which will react with leachate and be free of organic matter or other deleterious materials.

12-2-5 Prefabricated Boot (COUNTY'S RESPONSIBILITY WHEN ORDERING PREFABRICATED BOOT)

- F. The prefabricated boots will be DBOOT Formulation 2 (<http://www.dboot.ca/home/html>) or Equivalent.
- G. The prefabricated boots must be sized to fit the HDPE piping that the boot will be welded to.

12-3 EXECUTION

12-3-1 PREPARATION (COUNTY'S RESPONSIBILITY WHEN PREPARING FOR LINER INSTALL)

- A. Layout work and survey areas as necessary and set the required liners, contours, and datum by construction staking.

12-4 MEASUREMENT AND PAYMENT

12-4-1 MEASUREMENT

- A. Providing for and complying with the requirements set forth in this Section as a lump sum (LS) for each sump installed and payment will be based on the unit price provided on the Bid schedule.

12-4-2 PAYMENT

- A. Payment for each completed sump, Bid item 1, includes all cost to purchase, transport, and install the leak detection sump as described in this Section and as shown on the Construction Drawings.
- B. Payment also includes all items incidental to the work, including but not limited to:

1. Material samples, sampling, and testing.
2. Layout surveying.
3. Rejected material removal, re-testing, handling, and repair.
4. Clean up.

SECTION 13 - LEFT INTENTIONALLY BLANK