



COUNTY OF YOLO

COMMUNITY SERVICES DEPARTMENT
DIVISION OF INTEGRATED WASTE MANAGEMENT
44090 COUNTY ROAD 28H
WOODLAND, CA 95776
(530) 666-8852

PLANS AND SPECIFICATIONS

FOR
**CONSTRUCTION OF THE
WASTE MANAGEMENT UNIT 6
MODULE H BASE LINER SYSTEM**

NOT FOR CONSTRUCTION

at the

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

NOVEMBER 9, 2021

**Yolo County Community Services Department
Division of Integrated Waste Management
Ramin Yazdani, Director**

**Bid Opening: DECEMBER 10, 2021 @ 3PM
Yolo County Central Landfill Administration Conference Room
44090 County Road 28H
Woodland, CA 95776**

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I certify that this project was designed by me or under my direction in accordance with generally accepted engineering practices

Ramin Yazdani, Ph. D., P.E. C49910

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County of Yolo

State of California

Community Services Department

Division of Integrated Waste Management

Notice To Contractors

Sealed proposals for the project to be constructed at the Yolo County ("County") Central Landfill, entitled:

CONSTRUCTION OF THE WASTE MANAGEMENT UNIT 6 MODULE H BASE LINER SYSTEM

Shall be submitted by hard copy at the Yolo County Central Landfill, 44090 County Road 28H, Woodland, California 95776 no later than: **DECEMBER 10, 2021 @ 3PM** at which time they will be publicly opened and read in the Yolo County Central Landfill Conference Room at the above address.

There will be a pre-bid meeting at **2PM on NOVEMBER 23, 2021** at the Yolo County Central Landfill, located at 44090 County Road 28H, Woodland. Directions to the Yolo County Central Landfill can be found at:

<http://www.yolocounty.org/community-services/planning-public-works/integrated-waste-management-division/central-landfill#Directions>

General work description: The project is located at the Yolo County Central Landfill, bounded by County Road 104 on the west and County Road 28H on the south, approximately three (3) miles northeast of the City of Davis. (See location map on cover sheet of Plans).

**Yolo County Central Landfill
44090 County Road 28H
Woodland, CA 95776**

Normal operating hours are Monday through Saturday 6:30 a.m. to 4:00 p.m., and Sunday 8:00 a.m. to 4:00 p.m. The work to be performed under this contract consists of furnishing all equipment, materials, and tools; performing all required labor; and completing all work necessary for the construction of the following:

CONSTRUCTION OF THE WASTE MANAGEMENT UNIT 6 MODULE H BASE LINER SYSTEM which includes earthwork; clearing, stripping and grubbing; revegetation and

erosion control; placement of low permeability soil, gravel, sand, operations layer, HDPE geomembranes, geotextiles, geocomposites, geosynthetic clay liner; installation of HDPE piping and fittings.

BID SCHEDULE

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit |
|----------|--|----------------------------------|-------------------|------|
| 1 | Mobilization/Demobilization | 01025 | 1 | LS |
| 2 | Payment Bond | 01025 | 1 | LS |
| 3 | Performance Bond | 01025 | 1 | LS |
| 4 | Surveying and As-Built Drawings | 01025 | 1 | LS |
| 5 | General Fill | 01025 | 1,000 | CY |
| 6 | Subgrade Preparation | 01025 | 900,000 | SF |
| 7 | Low Permeability Soil Liner Test Pad | 01025 | 1 | LS |
| 8 | Excavation | 01025 | 1,000 | CY |
| 9 | Geosynthetic Clay Layer (GCL) | 01025 | 22,000 | SF |
| 10 | Secondary 40-Mil HDPE Geomembrane | 01025 | 710,000 | SF |
| 11 | Leak Detection System (LDS) Geocomposite Drainage Layer | 01025 | 710,000 | SF |
| 12 | LDS and Lysimeter Sump Systems, Bollards, Pipe Anchors | 01025 | 1 | LS |
| 13 | Compacted Soil Foundation Layer | 01025 | 76,000 | CY |
| 14 | Low Permeability Soil Layer for WMU 6H | 01025 | 51,000 | CY |
| 15 | Primary 60-Mil HDPE Geomembrane | 01025 | 734,000 | SF |
| 16 | LCRS Geocomposite | 01025 | 74,000 | SF |
| 17 | LCRS Gravel | 01025 | 19,550 | CY |
| 18 | 2-Inch Diameter HDPE LCRS Solid Injection Pipe | 01025 | 1,700 | LF |
| 19 | 2-Inch Diameter HDPE LCRS Perforated Injection Pipe | 01025 | 800 | LF |
| 20 | 8 oz./sy Nonwoven Geotextile | 01025 | 650,000 | SF |
| 21 | Sand for LCRS Drainage Trenches | 01025 | 1 | CY |
| 22a | Operations Layer – 1-Foot Thick Soil Cover | 01025 | 9,000 | CY |
| 22b | Operations Layer – 2-Foot Thick Ground Wood Cover | 01025 | 36,000 | CY |

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit |
|-----------------|--|---|--------------------------|-------------|
| 23 | 6-inch Diameter HDPE LCRS Pipe | 01025 | 1,400 | LF |
| 24 | 4-Inch Diameter HDPE LDS, Lysimeter, and LFG Pipes | 01025 | 2,500 | LF |
| 25 | Erosion Control Hydroseeding Exterior Slopes | 01025 | 3 | AC |
| 26 | Perimeter Levee Road Aggregate Base | 01025 | 500 | CY |
| 27 | 6-Inch Diameter HDPE Liquids Transmission Pipe | 01025 | 500 | LF |
| 28 | Preparation for Electrical Leak Location Survey | 01025 | 1 | LS |
| 29 | Prepare Drainage and Erosion Control Plan | 01025 | 1 | LS |
| 30 | Water Pollution Control | 01025 | 1 | LS |
| 31 | Waste Excavation and Removal | 01025 | 300 | CY |

(1) The Section Reference corresponds with the Section number within the Technical Provisions where the measurement and payment is described.

The foregoing quantities are approximate only, being given as a basis for the comparison of bids, and the County does not expressly or by implication agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of work, or to omit portions of work, as may be deemed necessary or advisable by the ENGINEER.

Bidder shall possess a valid A license and DIR number in order to submit a bid. If necessary, subcontractor's may be used to meet the license requirements necessary to complete the project in accordance with Business and Professions Code section 7059(b). The bidder must be properly licensed from the time it submits its bid through contract acceptance in accordance with Business and Professions Code section 7000 et seq.

Proposals are required for the entire work described herein. The County reserves the right to reject any or all proposals or to waive any irregularities or informalities in any proposals or in the proposal process.

This contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code section 12990.

Project plans, specifications, special provisions, proposal forms, and addenda for this project can be downloaded at no cost at www.bidsync.com. It is the bidder's responsibility to register at www.bidsync.com to ensure notification of all addenda. It is the bidder's responsibility to arrange for printing services to obtain printed copies of the bid documents.

The contract documents may be examined at the office of the Yolo County Central Landfill, and at the following locations:

Construction Bidboard, Inc.
McGraw-Hill Construction
Sacramento Builders' Exchange, Sacramento
El Dorado Builders' Exchange, Cameron Park

Questions must be submitted in writing through www.bidsync.com by 5PM NOVEMBER 30TH, 2021. Answers will be posted on www.bidsync.com by 5PM DECEMBER 3RD, 2021. Every answer will constitute an addendum to the Specifications.

Inquiries or questions based on alleged patent ambiguity of the plans, specifications or estimate must be communicated as a bidder inquiry prior to bid opening. Any such inquiries or questions, submitted after bid opening, will not be treated as a bid protest.

The successful bidder shall furnish a payment bond and a performance bond, each in the full amount of the contract price. These bonds shall be executed by a surety specified in California Code of Civil Procedure Section 995.310.

The County affirms that in any contract entered into pursuant to this advertisement, all bidders will be afforded full opportunity to submit bids in response to this invitation and will not be

discriminated against on the grounds of race, color, or national origin in consideration for an award.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wage rates are set forth in the General Prevailing Wage Rates for this project, available for review at Yolo County Central Landfill, 44090 County Road 28H, Woodland, California and available from the California Department of Industrial Relations' internet web site at <http://www.dir.ca.gov/DLSR/PWD>. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the General Prevailing Wage Rate Determinations. The successful bidder shall post a copy of the prevailing wage rates at each job site. It shall be mandatory upon the bidder to whom the contract is awarded, and upon any subcontractors, to comply with all Labor Code provisions, which include but are not limited to the payment of not less than the said specified prevailing wage rates to all workers employed by them in the execution of the contract, employment of apprentices, hours of labor and debarment of contractors and subcontractors.

Pursuant to Labor Code section 1725.5 and 1771.3, contractors and subcontractors who intend to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No proposal will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the project. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1. Information is available at: <http://www.dir.ca.gov/Public-Works/PublicWorks.html>. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. In bidding on this project, it shall be the bidder's sole responsibility to evaluate and include the cost of complying with all labor compliance requirements under this contract and applicable law in its proposal.

No proposal will be received unless it is made on a proposal form furnished by Yolo County Department of Community Services, either by a hard copy or downloaded from the aforementioned bid exchanges or www.bidsync.com. Copies or facsimiles of the bidder's completed and executed proposal forms submitted as a proposal will be rejected. Each proposal must be accompanied by a certified check, cashier's check, or bidder's bond made payable to Yolo County for an amount equal to at least ten percent (10%) of the amount of proposal, such guaranty to be forfeited should the bidder to whom the contract is awarded fail to enter into the contract. If a bond is used, it must be signed by the bidder and by a signatory of an authorized surety company all as provided by law.

Pursuant to Public Contract Code section 22300, the successful bidder may substitute certain securities for funds withheld by the County to ensure its performance under the contract.

Pursuant to Public Contract Code section 3400(b), if the County has made any findings designating certain materials, products, things, or services by specific brand or trade name, such findings and the materials, products, things, or services and their specific brand or trade names will be set forth in the Section 11-24 of the Special Provisions.

The engineers estimate for this project is \$ 6,135,645 .

ONE-HUNDRED (100) working days are allowed for completion of the work.

Dated this _____ day of _____ 2021.

Ramin Yazdani,
DIRECTOR,
DIVISION OF INTEGRATED WASTE MANAGEMENT

By: _____

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 - The written agreement between the COUNTY and CONTRACTOR covering the WORK to be performed: Other CONTRACT DOCUMENTS are incorporated into 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 PROJECT 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.

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

CALENDAR DAY - 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 CONTRACT DOCUMENTS 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 Community Services Department 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 CONTRACT DOCUMENTS, 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 CONTRACT DOCUMENTS. 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, for approval.

CONTRACT DOCUMENTS - The CONTRACT DOCUMENTS shall include: The Notice to Contractors, all duly issued ADDENDA, PROPOSAL, PLANS, TECHNICAL PROVISIONS, AGREEMENT, BONDS, and STANDARD SPECIFICATIONS, including GENERAL PROVISIONS, SPECIAL PROVISIONS, STANDARD CONSTRUCTION SPECIFICATIONS and STANDARD DRAWINGS 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 as stated in the AGREEMENT, as full compensation for the WORK, subject to any additions or deductions as provided in the CONTRACT DOCUMENTS, including all applicable taxes and cost.

CONTRACT TIME - The number of days or the date stated in the CONTRACT DOCUMENTS for the completion of the WORK, as may be adjusted by a CONTRACT CHANGE ORDER.

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 Community Services, 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 or 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 Community Services 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 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.

EXTRA WORK – New or unforeseen work not covered by the CONTRACT DOCUMENTS at bid time, as determined by the ENGINEER.

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 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 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 of the GENERAL PROVISIONS.

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 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 Community Services 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 DRAWINGS insofar as the same may apply.

(C) Any other plans or drawings referred to in the TECHNICAL PROVISIONS, 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 Community Services projects, and certain administrative details applicable thereto.

STANDARD SPECIFICATIONS or YOLO STANDARD SPECIFICATIONS - These specifications containing: GENERAL and SPECIAL PROVISIONS, STANDARD CONSTRUCTION SPECIFICATIONS, and STANDARD DRAWINGS. The BOARD OF SUPERVISORS has adopted these SPECIFICATIONS as the STANDARD SPECIFICATIONS for its Department of Community Services 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.

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.

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 the 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 CONTRACT DOCUMENTS.

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 CONTRACT TIME 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 may lead to a subsequently issued CONTRACT 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 are approximate only, being given as a basis for the comparison of BIDS. The COUNTY does not, expressly or by implication, agree 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 DOCUMENTS 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 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 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 2-2, 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 DEPARTMENT 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 FORM, BONDS, and AGREEMENT are bound separately from the Notice to Contractors, GENERAL PROVISIONS, SPECIAL PROVISIONS, TECHNICAL PROVISIONS, and PLANS. No part of the PROPOSAL FORM, BONDS, and AGREEMENT booklet shall be detached therefrom. The page numbers of each bound document are numbered sequentially, and by submitting its PROPOSAL, the BIDDER certifies that he or she 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 may 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 Debarment and Suspension
3. BIDDER'S List of Subcontractors
4. BIDDER'S Noncollusion Declaration
5. BIDDER'S Iran Contracting Act Certification
6. BIDDER'S Public Works Contractor Registration Certification
7. BIDDER'S Proposal Guarantee
8. 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 CONTRACT 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.

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 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. 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.

Additional Satisfactory Evidence shall be defined in Section 11-4, "Submissions of Bids and Award of Contract".

For bids in excess of Seven Hundred Fifty Thousand Dollars (\$750,000), the CONTRACTOR must provide proof to show compliance with Section 8-1.5.

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 requires accurate listing of certain SUBCONTRACTORS.

The PROPOSAL shall set forth the name and location of the place of business, California contractor license number, and Department of Industrial Relations registration number 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 BIDDER's total bid amount, or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 (1%) percent of the BIDDER'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 the 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.

2-11 PROTESTS

The COUNTY encourages CONTRACTORS to resolve issues regarding requirements or the procurement process through written correspondence and discussions. The COUNTY is committed to fostering relationships with its CONTRACTORS to encourage an ongoing pursuit to fulfill requirements.

2-11.1 *PROTEST PROCEDURES:*

All protests shall be written under the BIDDER's letterhead and submitted in accordance with the provisions stated herein. Protests may be submitted by mail or email. Protests submitted by facsimile will not be accepted. All protests must be addressed and submitted to the Manager of Procurement. All protests shall include at minimum the following information:

- a) The name, address, and telephone number of the BIDDER;
- b) The signature of the BIDDER or BIDDER's representative;
- c) The solicitation title and PROPOSAL due date;
- d) Name of COUNTY employee designated as the RFP/IFB Coordinator;
- e) Identification of the COUNTY determination or recommendation being protested or statute or procedure that is alleged to have been violated;
- f) A detailed statement identifying the legal and/or factual grounds of the protest and all documentation supporting the BIDDER's position;
- g) The form of relief requested.

The contact information for the Manager of Procurement is as follows:

Manager of Procurement
Yolo County Department of Financial Services
625 Court St., Ste. 103
Woodland, CA 95695-3490

BIDDER's failure to comply with these procedures and time limits in this Section shall constitute a failure to exhaust administrative remedies and a waiver of any right to further protest, including filing a Government Code Claim or legal proceedings.

The Manager of Procurement will review the materials in connection with the protest, assess the merits of the protest, and provide a written decision on the protest. The Manager of Procurement's decision is final.

2-11.2 PROTEST OF CONTRACT DOCUMENTS:

BIDDERS who are concerned regarding irregularities or lack of clarity in the CONTRACT DOCUMENTS should bring such concerns to the attention of the COUNTY. Notice shall be provided prior to the closing date and time of the designated question and answer period in the Notice to Contractors.

Notice must be clearly marked "**Notice of Protest of Contract Documents**". No protest shall be considered after the deadline stated above.

BIDDERS who fail to do so forfeit all rights to protest a solicitation or any subsequent award based on the CONTRACT DOCUMENTS of this solicitation. In the event the protest is denied and the BIDDER wishes to continue in the solicitation process, they must still submit a PROPOSAL prior to the close of the solicitation

2-11.3 PROTEST OF BID:

Protests related to another BIDDER must be received by e-mail or hard copy no later than 4:00 PM Pacific time five (5) business days after the proposal opening date. Notice must be clearly marked "**Notice of Proposal Protest**". A review may be granted if the protest is received within the specified time and the protest is from a BIDDER.

Throughout the review process, the COUNTY has no obligation to delay or otherwise postpone an award of a contract based on a protest.

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 award of the CONTRACT 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 United States dollars. All BONDS shall be furnished on forms provided by the COUNTY as included in the CONTRACT and bid documents.

No change or alteration of the WORK or modification of the CONTRACT DOCUMENTS 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 CONTRACT DOCUMENTS 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, provide acceptable BONDS, 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 them shall be just cause for the forfeiture of the PROPOSAL GUARANTY. The successful BIDDER may file with the DIRECTOR a written notice, signed by the BIDDER or their authorized representative, specifying that the BIDDER will refuse to execute the CONTRACT if presented to them. 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 herein before 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 GUARANTY to each BIDDER that is not to be further considered in making the award, but will continue to retain the PROPOSAL GUARANTY submitted by the first, second, and third lowest BIDDERS. Each PROPOSAL GUARANTY will be held until the CONTRACT has been executed, after which each PROPOSAL GUARANTY, except any PROPOSAL GUARANTY which has 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, 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 the obligations of the surety shall continue as long as any obligation of CONTRACTOR remains.

In the case of conflict between this guarantee provision and any warranty provision included in the CONTRACT, the most advantageous provisions to the COUNTY will apply.

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 AND EXTRA WORK

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 or BOARD OF SUPERVISORS, as applicable. Whenever any change is made as provided for herein, such change shall be considered and

treated as though originally included in the CONTRACT, and shall be subject to all terms, conditions, and provisions of the original CONTRACT.

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.

Any alterations, extensions of time, EXTRA WORK, or any other changes may be made without securing consent of the CONTRACTOR's surety or sureties.

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 4-3.3.1 or 4-3.3.2, such cost data shall be submitted with his request.

4-3.1 PROCEDURE AND PROTEST

The COUNTY may direct changes in the WORK be delivering a WORK DIRECTIVE CHANGE. To the extent the WORK DIRECTIVE CHANGE results in a change to compensation or time, CONTRACTOR must timely request a CONTRACT CHANGE ORDER and comply with all change order procedures in accordance with this Section. Notwithstanding issuance of a WORK DIRECTIVE CHANGE, CONTRACTOR's failure to timely request a CONTRACT CHANGE ORDER shall constitute a waiver by CONTRACTOR of any adjustment to compensation or time extension for WORK performed under the directive. The COUNTY shall not be liable to CONTRACTOR for WORK performed or omitted by CONTRACTOR in reliance on verbal orders.

If CONTRACTOR intends to initiate a CONTRACT CHANGE ORDER, then CONTRACTOR shall provide the COUNTY with written notice of the underlying facts and circumstances that give rise to the proposed change. CONTRACTOR shall submit the notice of change/delay prior to performance of the work and no later than five (5) days after CONTRACTOR discovers the circumstances causing the need for the CONTRACT CHANGE ORDER. To be considered valid and complete, the notice of change/delay shall include a general statement of the circumstances giving rise to the notice of change/delay and a reasonable order of magnitude estimate of the additional costs and/or time. If the circumstances give rise to both a cost adjustment and time extension, CONTRACTOR shall submit the notice of change and notice of delay concurrently.

CONTRACTOR shall submit a formal written request for a CONTRACT CHANGE ORDER for any adjustment to CONTRACTOR's compensation and/or any extension of time. The CONTRACT CHANGE ORDER request shall be made prior to incurring any expense and within fourteen (14) days from either CONTRACTOR'S notice of change/delay or the COUNTY'S WORK DIRECTIVE CHANGE ordering the change.

- a. The change order request shall include all of the following information (unless inapplicable to the change):

- i. A detailed description of the circumstances giving rise to the request;
- ii. A complete itemized cost proposal;
- iii. Supporting documentation for all costs;
- iv. A time impact analysis showing the impact of the delay to the critical path to completion;
- v. If any added costs or information cannot be determined at the time of the change order request, the reason the costs or information cannot be determined at the time; and
- vi. Certification to the accuracy of the change order request under penalty of perjury.

If the COUNTY denies the change order request or disagrees with the proposal submitted by CONTRACTOR, the COUNTY will notify the CONTRACTOR, and the COUNTY will provide its opinion of the appropriate price and/or time extension. If no agreement can be reached, the COUNTY shall have the right to order the work performed on a time-and-material basis by CONTRACT CHANGE ORDER or to issue a unilateral CONTRACT CHANGE ORDER setting forth the COUNTY'S determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. The COUNTY's determination shall become final and binding if the CONTRACTOR fails to submit a claim in writing to the COUNTY within fourteen (14) days of the issuance of the unilateral CONTRACT CHANGE ORDER, disputing the terms of the unilateral CONTRACT CHANGE ORDER and providing such supporting documentation for its position as the COUNTY may reasonably require.

CONTRACTOR'S FAILURE TO PROVIDE A COMPLETE AND TIMELY NOTICE OF CHANGE/DELAY AND/OR CHANGE ORDER REQUEST, OR TO COMPLY WITH ANY OTHER REQUIREMENT OF THIS SECTION, SHALL CONSTITUTE A WAIVER BY CONTRACTOR OF THE RIGHT TO A CONTRACT ADJUSTMENT ON ACCOUNT OF SUCH CIRCUMSTANCES AND A WAIVER OF ANY RIGHT TO FURTHER RECOURSE OR RECOVERY BY REASON OF OR RELATED TO SUCH CHANGE BY MEANS OF THE CLAIMS DISPUTE RESOLUTION PROCESS OR BY ANY OTHER LEGAL PROCESS OTHERWISE PROVIDED FOR UNDER APPLICABLE LAWS.

CONTRACTOR recognizes and acknowledges that timely submission of a formal written notice of change/delay and change order request, whether or not the circumstances of the change may be known to the COUNTY or available to the COUNTY through other means, is not a mere formality but is of crucial importance to the ability of the COUNTY to promptly identify, prioritize, evaluate and mitigate the potential effects of changes. Any form of informal notice, whether verbal or written (including, without limitation, statements in requests for information, statements at regular job meetings or entries on monthly reports, daily logs or job

meeting minutes), that does not strictly comply with the formal requirements of this Section, shall accordingly be insufficient.

A CONTRACT CHANGE ORDER signed by the CONTRACTOR indicates the CONTRACTOR's agreement therewith, including any adjustment in compensation or extension of time, and the full and final settlement of all costs (direct, indirect and overhead) related to the work authorized by the CONTRACT CHANGE ORDER.

The COUNTY may designate the forms to be used for notices, requests, and CONTRACT CHANGE ORDER. If so designated, CONTRACTOR may only use such forms. CONTRACTOR shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the CONTRACT CHANGE ORDER. No claims shall be allowed for impact, extended overhead costs, constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The CONTRACTOR may not change or modify the COUNTY'S CONTRACT CHANGE ORDER form in an attempt to reserve additional rights.

4-3.2 *DETERMINING ADJUSTMENTS TO COMPENSATION*

CONTRACTOR shall not be entitled to any compensation for work subject to a CONTRACT CHANGE ORDER except as expressly set forth in this Section. The mark-up added in instances of EXTRA WORK shall constitute the entire amount of profit, any mark-ups, any field or home office overhead costs, including personnel, equipment or office space, any materials, or any costs of equipment idle time for such EXTRA WORK.

Adjustments, if any, in the amount to be paid CONTRACTOR by reason of any 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 EXTRA 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.

Estimates for Lump Sum Price and Unit Prices, and accounting for Force Account shall be limited to direct expenditures necessitated specifically by the change and shall be segregated as set forth in Section 4-4 Force Account Payment.

4-3.3 *INCREASED OR DECREASED QUANTITIES*

If the total pay quantity of any item of WORK required under the CONTRACT varies from the ENGINEER's ESTIMATE by 25 percent or less, payment will be made at the CONTRACT unit price.

This calculation may result in either an additive or deductive CONTRACT CHANGE ORDER. Because CONTRACT unit price includes overhead and profit as determined by CONTRACTOR at the time of its proposal submission, no mark up or deduction for overhead and profit will be allowed.

If the total pay quantity of any item of WORK required under the CONTRACT varies from the ENGINEER's ESTIMATE 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 4-3.3.1, 4-3.3.2, or 4-3.3.3, as applicable.

4-3.3.1 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 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 4-4.

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 4-4, 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.

4-3.3.2 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, 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 4-4, 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 4-4; or such adjustment will be as agreed to by CONTRACTOR and the ENGINEER.

The payment for the actual 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.

4-3.3.3 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 materials conforming to the PLANS and SPECIFICATIONS are 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 4-3.3.3 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 4-4.

4-3.4 *EFFECT OF EXTENSION OF TIME*

The granting of an extension of CONTRACT TIME for the completion of the WORK on account of delays which in the judgment of the ENGINEER are unavoidable delays or granted in a CONTRACT CHANGE ORDER, shall in no way operate as a waiver on the part of the COUNTY of any of its rights under this CONTRACT.

4-4 FORCE ACCOUNT PAYMENT

When a 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:

4-4.1 *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 this Section.

To the total of the direct costs computed for labor, materials and equipment, there will be added a markup of fifteen percent (15%) to the cost of labor, fifteen percent (15%) to the cost of materials, and fifteen percent (15%) 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 4-4.1.1, "Labor," 4-4.1.2, "Materials," and 4-4.1.3, "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 by a CONTRACT CHANGE ORDER, an additional markup of five percent (5%) may be added to the total cost of that EXTRA WORK including all markups specified in this Section 4-4.1. The additional five percent (5%) 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.

4-4.1.1 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 EXTRA 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 4-4.1.1A, 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 EXTRA WORK is

accomplished. 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.

4-4.1.2 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.

4-4.1.3 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 EXTRA WORK is accomplished, 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 4-4.1.1, "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 EXTRA 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 EXTRA 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 EXTRA 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 EXTRA 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 EXTRA 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 EXTRA 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.

4-4.2 *RECORDS*

CONTRACTOR shall maintain project records in such a manner as to provide a clear distinction between the direct costs of a CONTRACT CHANGE ORDER and the costs of other operations.

From the above records, CONTRACTOR shall furnish the ENGINEER completed daily CONTRACT CHANGE ORDER WORK reports, for each day to be paid for on a force account basis. The daily CONTRACT CHANGE ORDER 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 CONTRACT CHANGE ORDER 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 CONTRACT CHANGE ORDER reports, or if not available, they shall be submitted with subsequent daily CONTRACT CHANGE ORDER reports. Should said vendor's invoices not be submitted within sixty (60) DAYS after the date of delivery of the material or within fifteen (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 4-4.1.2.A.

Said daily CONTRACT CHANGE ORDER reports shall be signed by CONTRACTOR or an authorized representative.

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

CONTRACTOR's cost records, pertaining to EXTRA 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 every 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 sixty (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.

4-5 PROCEDURE FOR RESOLVING CLAIMS

CONTRACTOR shall timely comply with any and all requirements of the CONTRACT DOCUMENTS pertaining to notices and requests for changes to the CONTRACT TIME or CONTRACT PRICE as a prerequisite to filing any claim governed by this Section. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the time for completion or CONTRACTOR's compensation, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the CONTRACT or at law.

- A. **Intent.** Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of \$375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Section is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Section shall be construed to be consistent with all applicable law, including but not limited to these statutes.
- B. **Claims.** For purposes of this Section, "Claim" means a separate demand by the CONTRACTOR for:
 - a. An adjustment to the time for completion including, without limitation, for relief from damages or penalties for delay assessed by the COUNTY;
 - b. Payment by the COUNTY of money or damages arising from WORK done by or on behalf of the CONTRACTOR pursuant to the CONTRACT, payment for which is not otherwise expressly provided or to which the CONTRACTOR is not otherwise entitled; or
 - c. An amount the payment of which is disputed by the COUNTY.

A "Claim" does not include any demand for payment for which the CONTRACTOR has failed to provide notice, request a CONTRACT CHANGE ORDER, or otherwise failed to follow any procedures contained in the CONTRACT DOCUMENTS.

- C. **Filing Claims.** Claims governed by this Section may not be filed unless and until the CONTRACTOR completes any and all requirements of the CONTRACT DOCUMENTS pertaining to notices and requests for changes to the CONTRACT PRICE OR CONTRACT TIME, and CONTRACTOR'S request for a change has been denied in whole or in part. Claims governed by this Section must be filed no later than fourteen (14) days after a request for change has been denied in whole or in part or after any other event giving rise to the Claim. The Claim shall be submitted in writing to the COUNTY and shall include on its first page the following words in 16 point capital font: "THIS IS A CLAIM." The Claim shall include the all information and documents necessary to substantiate the Claim, including but not limited to those identified below. Nothing in this Section is intended to extend the time limit or supersede notice requirements otherwise provided by CONTRACT DOCUMENTS. Failure to follow such contractual requirements shall bar any Claims or subsequent proceedings for compensation or payment thereon.
- D. **Documentation.** The CONTRACTOR shall submit all Claims in the following format:
- a. Summary description of Claim including basis of entitlement, merit and amount of time or money requested, with specific reference to the CONTRACT DOCUMENT provisions pursuant to which the Claim is made
 - b. List of documents relating to Claim:
 - i. Specifications
 - ii. Drawings
 - iii. Clarifications (Requests for Information)
 - iv. Schedules
 - v. Other
 - c. Chronology of events and correspondence
 - d. Narrative analysis of Claim merit
 - e. Analysis of Claim cost, including calculations and supporting documents
 - f. Time impact analysis in the form required by the CONTRACT DOCUMENTS or, if the CONTRACT DOCUMENTS do not require a particular format, CPM format, if an adjustment of the CONTRACT TIME is requested
- E. **COUNTY'S Response.** Upon receipt of a Claim pursuant to this Section, the COUNTY shall conduct a reasonable review of the Claim and, within a period not to exceed forty-five (45) DAYS, shall provide the CONTRACTOR a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the Claim will be processed and made within sixty (60) DAYS after the COUNTY issues its written statement.
- a. If the COUNTY needs approval from its governing body to provide the CONTRACTOR a written statement identifying the disputed portion and the undisputed portion of the Claim, and the COUNTY'S governing body does not

meet within the forty-five (45) DAYS or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, the COUNTY shall have up to three (3) DAYS following the next duly publicly noticed meeting of the COUNTY'S governing body after the forty-five (45) DAY period, or extension, expires to provide the CONTRACTOR a written statement identifying the disputed portion and the undisputed portion.

- b. Within thirty (30) DAYS of receipt of a Claim, the COUNTY may request in writing additional documentation supporting the Claim or relating to defenses or Claims the COUNTY may have against the CONTRACTOR. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the COUNTY and the CONTRACTOR. The COUNTY'S written response to the Claim, as further documented, shall be submitted to the CONTRACTOR within thirty (30) DAYS (if the Claim is less than \$50,000, within fifteen (15) DAYS after receipt of the further documentation, or within a period of time no greater than that taken by the CONTRACTOR in producing the additional information or requested documentation, whichever is greater.
- F. Meet and Confer.** If the CONTRACTOR disputes the COUNTY'S written response, or the COUNTY fails to respond within the time prescribed, the CONTRACTOR may so notify the COUNTY, in writing, either within fifteen (15) DAYS of receipt of the COUNTY'S response or within fifteen (15) DAYS of the COUNTY'S failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, the COUNTY shall schedule a meet and confer conference within thirty (30) DAYS for settlement of the dispute.
- G. Mediation.** Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the COUNTY shall provide the CONTRACTOR a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) DAYS after the COUNTY issues its written statement. Any disputed portion of the Claim, as identified by the CONTRACTOR in writing, shall be submitted to nonbinding mediation, with the COUNTY and the CONTRACTOR sharing the associated costs equally. The COUNTY and CONTRACTOR shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing, unless the parties agree to select a mediator at a later time.
- a. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and

costs charged by its respective mediator in connection with the selection of the neutral mediator.

- b. For purposes of this Section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this Section.
- c. Unless otherwise agreed to by the COUNTY and the CONTRACTOR in writing, the mediation conducted pursuant to this Section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
- d. The mediation shall be held no earlier than the date the CONTRACTOR completes the WORK or the date that the CONTRACTOR last performs WORK, whichever is earlier. All unresolved Claims shall be considered jointly in a single mediation, unless a new unrelated Claim arises after mediation is completed.

H. **Procedures After Mediation.** If following the mediation, the Claim or any portion remains in dispute, the CONTRACTOR must file a Claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating litigation. For purposes of those provisions, the running of the period of time within which a Claim must be filed shall be tolled from the time the CONTRACTOR submits his or her written Claim pursuant to subdivision (a) until the time the Claim is denied, including any period of time utilized by the meet and confer conference.

I. **Civil Actions.** The following procedures are established for all civil actions filed to resolve Claims of \$375,000 or less:

- a. Within sixty (60) DAYS, but no earlier than thirty (30) DAYS, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this CONTRACT. The mediation process shall provide for the selection within fifteen (15) DAYS by both parties of a disinterested third person as mediator, shall be commenced within thirty (30) DAYS of the submittal, and shall be concluded within fifteen (15) DAYS from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.
- b. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any

proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

J. Government Code Claim Procedures.

- a. This Section does not apply to tort claims and nothing in this Section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.5 of Title 1 of the Government Code.
- b. In addition to any and all requirements of the CONTRACT DOCUMENTS pertaining to notices of and requests for adjustment to the CONTRACT TIME, CONTRACT PRICE, or compensation or payment for extra work, disputed WORK, construction claims and/or changed conditions, the CONTRACTOR must comply with the claim procedures set forth in Government Code Section 900, et seq. prior to filing any lawsuit against the COUNTY.
- c. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to adjustment of the CONTRACT TIME OR CONTRACT WORK for extra work, disputed work, construction claims, and/or changed conditions have been followed by CONTRACTOR. If CONTRACTOR does not comply with the Government Code claim procedure or the prerequisite contractual requirements, CONTRACTOR may not file any action against the COUNTY.
- d. **A Government Code claim must be filed no earlier than the date the WORK is completed or the date the CONTRACTOR last performs WORK on the PROJECT, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims known to CONTRACTOR or that should reasonably be known to CONTRACTOR excepting only new unrelated Claims that arise after the Government Code claim is submitted.**

- K. **Non-Waiver.** The COUNTY's failure to respond to a Claim from the CONTRACTOR within the time periods described in this Section or to otherwise meet the time requirements of this Section shall result in the Claim being deemed rejected in its entirety, and shall not constitute a waiver of any rights under this Section.

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 CONTRACTOR or its surety of their responsibilities under the CONTRACT.

The CONTRACTOR shall not, without the written consent of the COUNTY: (a) substitute any 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 SUBCONTRACTOR listed on the PROPOSAL. Consent to such substitution or subletting shall only be given pursuant to California Public Contract Code section 4107.

In the event of such substitution, the COUNTY shall give at least five (5) WORKING DAYS' notice, in writing, to the listed SUBCONTRACTOR, unless the said SUBCONTRACTOR involved has itself advised the COUNTY, in writing, that it has knowledge of the 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 its 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 CONTRACT DOCUMENTS. 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 thirty (30) DAYS exclusive of any time as awaiting clarification or further information; however, the time for return will necessarily vary and may exceed thirty (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 DOCUMENTS, 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 its submittal may concern work by another contractor of the COUNTY. CONTRACTOR 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 DOCUMENTS, 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

Wiring Diagrams of systems

Internal Wiring Diagrams and Circuit Board Schematics and Layout Drawings

Manufacturer's recommended spare parts lists

Name, address and telephone number of nearest parts and service agency

Systems Balance Data

Maintenance and Service Instructions

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.

5-8 SURVEYS, LINES, AND GRADES

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 topographic surveys of the construction area immediately prior to the start of the WORK and at the completion of the WORK. The construction record as-built surveys shall be performed at a maximum 50-foot on-centers and at grade breaks. The CONTRACTOR shall not place other components of the construction until directed by the ENGINEER.

The CONTRACTOR reserves the right to perform any desired checking of COUNTY'S surveys and request correction if necessary, but this shall not relieve the CONTRACTOR of the responsibility for adequate performance of the WORK.

The CONTRACTOR shall include in its 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.

| TABLE 5-8 | | |
|--------------------------|------------------------|-----------|
| Survey Tolerances | | |
| Type of Line or Mark | Horizontal Position | Elevation |

| | | |
|----------------------------|-------------|------------|
| Permanent reference points | 1 in 10,000 | ± .01 foot |
|----------------------------|-------------|------------|

5-9 RECORD DOCUMENTS

It shall be the responsibility of the CONTRACTOR to document all as-built conditions (with the exception of earthwork surveys performed by the COUNTY'S Third Party Surveyor), including any construction record surveys. CONTRACTOR shall maintain in good order, up-to-date and in a safe place at the site, one record copy of PROJECT DRAWINGS, SPECIFICATIONS, ADDENDA, CONTRACT CHANGE ORDERS, WORK DIRECTIVE CHANGES, FIELD ORDERS, approved samples, approved Shop Drawings, and written interpretations and clarifications. On these, CONTRACTOR shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented in the CONTRACT DOCUMENTS, including buried or concealed construction and utility features which are revealed during construction ("Record Documents"). Red ink shall be used for alterations and notes.

These Record Documents will be available to ENGINEER for reference and review at any time. Failure on the CONTRACTOR's part to keep Record Documents current could result in withholding partial payment. Upon completion of the WORK, these Record Documents will be delivered to the ENGINEER for review and approval. Record Documents shall be submitted in both hard copy and electronic form.

The information submitted by CONTRACTOR will be assumed to be correct, and the CONTRACTOR shall be responsible for, and liable to COUNTY, for the accuracy of such information, and for any errors or omissions which may or may not appear on the Record Documents.

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 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 Job 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 PROJECT 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.

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 a water source designated on the PLANS and in Section 11-11. 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 in the entire Work area 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 requires 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
5. Number and location of flag persons (if required).

5-15 DIFFERING SITE CONDITIONS

If the WORK involves excavating trenches or other excavations that extend deeper than four (4) feet below the surface, the CONTRACTOR shall promptly, and before the following conditions are disturbed, notify the COUNTY in writing, of any:

- a) Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
- b) Subsurface or latent physical conditions at the site differing materially from those indicated by information about the site made available to BIDDERS prior to the deadline for submitting bids.
- c) 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 CONTRACT CHANGE ORDER, increasing or decreasing CONTRACT TIME or CONTRACT PRICE or both, as appropriate, as provided for in these GENERAL PROVISIONS. 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 the CONTRACT TIME, 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

Storm, surface, ground, nuisance, or other waters may be encountered at various times during construction of the WORK. Therefore, the CONTRACTOR hereby acknowledges that it has investigated the risk arising from such waters, has prepared its PROPOSAL accordingly, and assumes any and all risks and liabilities arising therefrom.

No separate payment shall be allowed for the diversion and control of water. All costs to maintaining dry working areas shall be included in the unit prices paid for other items of WORK in the PROPOSAL.

CONTRACTOR shall keep itself and SUBCONTRACTORS, staff, and employees fully informed of and in compliance with all local, state and federal laws, rules and regulations that may impact, or be implicated by the performance of the WORK including, without limitation, all applicable provisions regulating discharges of storm water; the Federal Water Pollution Control Act (33 U.S.C. § 13000 et seq.); the California Porter-Cologne Water Quality Control Act (Cal Water Code §§ 13000-14950); and any and all regulations, policies, or permits issued pursuant to any such authority.

CONTRACTOR shall comply with all conditions of the State Water Resources Control Board ("State Water Board") National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity ("Construction General Permit") for all construction activity which results in the disturbance of in excess of one acre of total land area or which is part of a larger common area of development or sale. CONTRACTOR shall comply with the lawful requirements of the COUNTY, and any other applicable municipality, drainage district, or other local agency with jurisdiction over the location where the WORK is to be conducted, regarding discharges of

storm water to separate storm drain systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.

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. Copies of the SWPPP for the site are available through the Yolo County Central Landfill.

Failure to comply with the Construction General Permit, laws, regulations, and ordinances listed in this Section is a violation of federal and state law. Notwithstanding any other indemnity contained in the CONTRACT DOCUMENTS, CONTRACTOR agrees to indemnify and hold harmless the COUNTY its officials, officers, agents, employees and authorized volunteers from and against any and all claims, demands, fees, costs, expenses, or losses or liabilities of any kind or nature which the COUNTY, its officials, officers, agents, employees and authorized volunteers may sustain or incur for noncompliance with the Permit, laws, regulations, and ordinances listed above, arising out of or in connection with the WORK, except for liability resulting from the sole established negligence, willful misconduct or active negligence of the COUNTY, its officials, officers, agents, employees or authorized volunteers.

All fines imposed by regulating agencies related to compliance with the SWPPP are the responsibility of the CONTRACTOR. The COUNTY reserves the right to defend any enforcement action or civil action brought against the COUNTY for CONTRACTOR's failure to comply with any applicable water quality law, regulation, or policy. CONTRACTOR hereby agrees to be bound by, and to reimburse the COUNTY for the costs associated with, any settlement reached between the COUNTY and any relevant enforcement entity.

5-18 AIR POLLUTION CONTROL

CONTRACTOR shall comply with all air pollution control rules, regulations, ordinances and statutes. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

Without limiting the foregoing, CONTRACTOR must fully comply with all applicable laws, rules and regulations in furnishing or using equipment and/or providing services, including, but not limited to, emissions limits and permitting requirements imposed by the Air Quality Management District with jurisdiction over the PROJECT and/or California Air Resources Board (CARB). CONTRACTOR shall specifically be aware of the application of these limits and

requirements to "portable equipment", which definition is considered includes any item of equipment with a fuel-powered engine.

5-19 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.

6-3 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 CONTRACT DOCUMENTS including the STANDARD SPECIFICATIONS (GENERAL PROVISIONS, SPECIAL PROVISIONS, STANDARD CONSTRUCTION SPECIFICATIONS), the STANDARD DRAWINGS, PROJECT DRAWINGS, TECHNICAL PROVISIONS, CONTRACT CHANGE ORDERS, ADDENDA, 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 the CONTRACT DOCUMENTS, such conflicts shall be clarified according to the following order, the first ranked taking precedence over the lower ranked:

- CONTRACT CHANGE ORDERS
- ADDENDA
- SPECIAL PROVISIONS
- TECHNICAL PROVISIONS
- PROJECT DRAWINGS
- CONTRACT
- STANDARD DRAWINGS
- GENERAL PROVISIONS
- STANDARD CONSTRUCTION SPECIFICATIONS
- Notice to Contractors
- PROPOSAL
- Reference 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 the CONTRACT DOCUMENTS, 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 the CONTRACT DOCUMENTS, reference shall be made to the ENGINEER whose decision thereon shall be final.

With reference to PROJECT DRAWINGS or STANDARD DRAWINGS, the order of precedence shall always be as follows:

Figures govern over scaled dimensions; and

Detail drawings govern over general drawings

Notwithstanding the orders of precedence established above, in the event of conflicts, the higher standard, higher quality and most expensive shall always apply.

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 the CONTRACT DOCUMENTS. 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 twenty-four (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 their supervision stopped,

if in their 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 CONTRACT DOCUMENTS.

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 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 OF SUPERVISORS 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 not bind the BOARD OF SUPERVISORS to formal acceptance, nor relieve CONTRACTOR from the responsibility of completing or correcting any WORK. Within ten (10) days of acceptance by the BOARD OF SUPERVISORS, 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.

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 CONTRACT DOCUMENTS. 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 SPECIAL 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 CONTRACT DOCUMENTS 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 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 no later than thirty-five (35) DAYS after award of CONTRACT and in ample time to permit approval without delaying the WORK. Provisions regarding submission of substitution requests shall not in any way authorize an extension of time for the performance of this CONTRACT. If a substitution request is rejected by the COUNTY, the CONTRACTOR shall provide the articles or materials specified herein. The

COUNTY shall not be responsible for any costs incurred by the CONTRACTOR associated with substitution requests.

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 supplier. 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 the CONTRACT DOCUMENTS require that such a certificate be furnished. In addition, when so authorized in the CONTRACT DOCUMENTS, 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 CONTRACT DOCUMENTS, 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 itself 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, 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 CONTRACT DOCUMENTS 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 (8) hours labor constitutes a legal day's work. CONTRACTOR shall forfeit, as a penalty to the COUNTY, Twenty-Five Dollars (\$25) 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 1814, thereof, inclusive. Notwithstanding the provisions of Section 1810 to Section 1814, 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 Section 1815.

8-1.2 *PREVAILING WAGE*

CONTRACTOR is aware of the requirements of Labor Code sections 1720 et seq. and 1770 et seq., as well as California Code of Regulations, Title 8, Section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. Since this project involves an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is One Thousand Dollars \$1,000 or more, CONTRACTOR

agrees to fully comply with such Prevailing Wage Laws. CONTRACTOR shall obtain a copy of the prevailing rates of per diem wages at the commencement of this CONTRACT from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov. In the alternative, CONTRACTOR may view a copy of the prevailing rate of per diem wages which are on file at the DEPARTMENT and shall be made available to interested parties upon request. CONTRACTOR shall make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to perform work on the project available to interested parties upon request, and shall post copies at the CONTRACTOR'S principal place of business and at the project site, including a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned. CONTRACTOR shall defend, indemnify and hold the COUNTY, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

CONTRACTOR shall comply with Labor Code sections 1774 and 1775. In accordance with section 1775, CONTRACTOR shall forfeit as penalty to the COUNTY, Two Hundred Dollars (\$200.00) for each calendar day or portion thereof, for each worker paid less than the prevailing rates. 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.

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 at the time of executing 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

Pursuant to Labor Code section 1776, CONTRACTOR and SUBCONTRACTORS shall maintain weekly certified payroll records, showing the names, addresses, Social Security numbers, work classifications, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by them in connection with the WORK under this CONTRACT. CONTRACTOR shall certify under penalty of perjury that records maintained and submitted by CONTRACTOR are true and accurate. CONTRACTOR shall also require SUBCONTRACTORS to certify weekly payroll records under penalty of perjury.

In accordance with Labor Code section 1771.4, CONTRACTOR AND SUBCONTRACTOR shall furnish the certified payroll records directly to the Department of Industrial Relations on the specified interval and format prescribed by the Department of Industrial Relations, which may

include electronic submission. CONTRACTOR shall comply with all requirements and regulations from the Department of Industrial Relations relating to labor compliance monitoring and enforcement. The requirement to submit certified payroll records directly to the Labor Commissioner under Labor Code section 1771.4 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Section 1771.4.

The payroll records described herein shall be certified and submitted by the CONTRACTOR at a time designated by the COUNTY. CONTRACTOR shall also provide the following:

- B. A certified copy of the employee's payroll records shall be made available for inspection or furnished to such employee or his or her authorized representative on request.
- C. A certified copy of all payroll records described herein shall be made available for inspection or furnished upon request of the Department of Industrial Relations.

Unless submitted electronically, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement ("DLSE") of the Department of Industrial Relations or shall contain the same information as the forms provided by the DLSE.

Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, COUNTY, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the CONTRACTOR awarded the CONTRACT or performing the CONTRACT shall not be marked or obliterated.

In the event of noncompliance with the requirements of this Section, CONTRACTOR shall have ten (10) DAYS in which to comply subsequent to receipt of written notice specifying in what respects the CONTRACTOR must comply with this Section. Should noncompliance still be evident after such 10-day period, CONTRACTOR shall pay a penalty of One Hundred Dollars (\$100.00) to COUNTY for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payment then due.

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

The responsibility for compliance with this Section shall rest upon the CONTRACTOR.

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.

Pursuant to the above and other applicable provisions of law, CONTRACTOR and SUBCONTRACTOR shall not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law on this project. CONTRACTOR will take affirmative action to insure that employees are treated during employment or training without regard to their race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law.

8-1.5 *APPRENTICES*

CONTRACTOR and SUBCONTRACTORS shall comply with 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, CONTRACTOR and/or SUBCONTRACTORS 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 CONTRACTOR. Responsibility for compliance with this Section lies with the 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.

In addition, the COUNTY requires that all bidders on public work projects in excess of Seven Hundred Fifty Thousand Dollars (\$750,000.00) to participate in a State of California Division of Apprenticeship Standards approved joint labor and management apprenticeship program.

Proof of compliance with this requirement must be provided at the time the PROPOSAL is submitted.

8-1.6 WORKER'S COMPENSATION

Pursuant to the requirements of Section 1860 of the California Labor Code, CONTRACTOR shall secure the payment of Workers' Compensation to its 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 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 PUBLIC WORKS CONTRACTOR REGISTRATION

Pursuant to Labor Code sections 1725.5 and 1771.1, the CONTRACTOR and its SUBCONTRACTORS must be registered with the Department of Industrial Relations prior to the execution of a contract to perform public works project. By entering into this CONTRACT, CONTRACTOR represents that it is aware of the registration requirement and is currently registered with the DIR. CONTRACTOR shall maintain a current registration for the duration of the PROJECT. CONTRACTOR shall further include the requirements of Labor Code sections 1725.5 and 1771.1 in any subcontract and ensure that all SUBCONTRACTORS are registered at the time this CONTRACT is entered into and maintain registration for the duration of the PROJECT. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works

project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1.

8-1.8 *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.

The Contractors' State License Board has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

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.

In accordance with Revenue and Taxation Code section 107.6, the CONTRACT DOCUMENTS may create a possessory interest subject to personal property taxation for which CONTRACTOR will be responsible.

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, the 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 shall submit to the ENGINEER at the preconstruction meeting, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from hazards of caving ground during the excavation of any trench or trenches five feet or more in depth. If such plan varies from shoring system standards established by the Construction Safety Orders of the California Code of Regulations, Department of Industrial Relations, the plan shall be prepared by a California registered civil or structural engineer. The plan shall not be less effective than the shoring, bracing, sloping, or other provisions of the Construction Safety Orders, as defined in the California Code of Regulations. CONTRACTOR shall designate in writing the "competent person" as defined in Title 8, California Code of Regulations, who shall be present at the work site each day that trenching/excavation is in progress. The "competent person" shall prepare and provide daily trenching/excavation inspection reports to the ENGINEER. CONTRACTOR shall also submit a copy of its annual California Occupational Safety and Health Administration (Cal/OSHA) trench/excavation permit.

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. The locating of utilities shall be in conformance with Government Code Section 4216 except for the COUNTY's utilities located on the COUNTY's property and not on public right-of-way.

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.

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 or applicable warranty period pursuant to the CONTRACT or California law.

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.

8-18 PERSONAL LIABILITY

Neither the BOARD OF SUPERVISORS, DIRECTOR, 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, BONDS, and approved insurance 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 as directed by in Section 11-5 "Prosecution and Progress".

9-2 PROGRESS SCHEDULE

CONTRACTOR shall submit to the ENGINEER a practicable critical path method progress schedule within ten (10) WORKING DAYS of the NOTICE TO PROCEED. 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 schedule 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 special order items, i.e. control panels, pumps, etc...
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, i.e. 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. When no bid item is provided for a progress schedule, payment for progress schedule costs shall be deemed to be included in the other bid items.

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 the number of WORKING DAYS set forth in Section 11-5, "Prosecution and Progress" 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 Seventy-Five Percent (75%) of the normal labor and equipment force engaged in the current controlling operation, or operations, for at least Sixty Percent (60%) 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 fifteen (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."

The COUNTY is under no obligation to consider early completion of the PROJECT and CONTRACTOR shall not, under any circumstances, receive additional compensation from the COUNTY (including but not limited to indirect, general, administrative or other forms of overhead costs) for the period between the time of earlier completion proposed by the CONTRACTOR and the CONTRACT completion date.

9-5 LIQUIDATED DAMAGES

If the WORK required under the CONTRACT DOCUMENTS is not finished or completed within the CONTRACT TIME, the CONTRACTOR shall pay to the COUNTY, as fixed and liquidated damages and not as penalty, the sum set forth in Section 11-5, "Prosecution and Progress" per day for each and every DAY of 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 CONTRACT TIME.

If the WORK required under this CONTRACT is not finished or completed within the CONTRACT TIME, 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 Section 11-5, "Prosecution and Progress" per day for each and every DAY of delay in finishing the WORK in excess of the CONTRACT TIME. 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 if the WORK called for under the CONTRACT is not finished and completed in all parts and requirements within the CONTRACT TIME, the ENGINEER shall have the right to increase the number of working days or not, as they may deem best to serve the interest of the COUNTY.

CONTRACTOR's entitlement to an extension of the CONTRACT TIME is limited to a COUNTY-caused extension of the critical path, reduced by the CONTRACTOR's concurrent delays, and established by a proper time impact analysis. CONTRACTOR shall not be charged liquidated damages because of any delays in completion of the WORK due to unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR (or its SUBCONTRACTORS or suppliers). COUNTY shall ascertain the facts and extent of delay and grant extension of time for completing the WORK when, in its judgment, the facts justify such an extension. No time extension shall be allowed unless, and then only to the extent that, COUNTY-caused delay extends the critical path beyond the previously approved CONTRACT TIME.

CONTRACTOR will be granted an extension of the CONTRACT TIME for the completion of 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, freight embargoes or other causes not the fault of and beyond the control of the COUNTY and CONTRACTOR when the WORK stopped is on the critical path; provided, that CONTRACTOR shall notify the ENGINEER in writing of the causes of delay within fifteen (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. Such a non-compensable adjustment shall be CONTRACTOR's sole and exclusive remedy for such delays.

No extension of the CONTRACT 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 the CONTRACT TIME. Delays in obtaining materials due to priority in filling orders will not constitute a shortage of materials. The ENGINEER shall have exclusive authority to determine if the shortage of materials constitutes a delay.

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. In no case shall the COUNTY be liable for

any costs which are borne by the CONTRACTOR in the regular course of business, including, but not limited to, home office overhead and other ongoing costs.

It is the intent of the above provisions that CONTRACTOR shall not be relieved of liability for liquidated damages 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.

CONTRACTOR shall not be entitled to any extension of time unless CONTRACTOR properly notices the delay and adjustment to compensation and requests a CONTRACT CHANGE ORDER in accordance with these SPECIFICATIONS. CONTRACTOR's failure to timely and fully comply with the change order procedures shall constitute a waiver of CONTRACTOR's right to a time extension.

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 to the 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 4-4.1.1, "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 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.

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 weighmaster 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 RESERVED

10-4 RESERVED

10-5 RESERVED

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 9350 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 a percentage 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 set forth in Section 11-21 "Payment Retention".

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. Upon receipt, the ENGINEER shall review the payment request to determine whether it is undisputed and suitable for payment. If the payment request is determined to be unsuitable for payment, it shall be returned to CONTRACTOR as soon as practicable but not later than seven (7) DAYS after receipt, accompanied by a document setting forth in writing the reasons why the payment request is not proper. The COUNTY shall make the progress payment within thirty (30) DAYS after the receipt of an undisputed and properly submitted payment request from CONTRACTOR, provided that a release of liens and claims has been received from the CONTRACTOR pursuant to Civil Code section 8132. The number of days available to the COUNTY to make a payment without incurring interest pursuant to this paragraph shall be reduced by the number of days by which the ENGINEER exceeds the seven (7) day requirement.

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.

The COUNTY may withhold a sufficient amount or amounts of any payment or payments otherwise due to CONTRACTOR, as in his judgment may be necessary to cover:

Payments which may be past due and payable for just claims against CONTRACTOR or any SUBCONTRACTORS for labor or materials furnished in and about the performance of work on the PROJECT under this CONTRACT.

Defective work not remedied.

Failure of CONTRACTOR to make proper payments to its SUBCONTRACTOR or for material or labor.

Completion of the CONTRACT if there is a reasonable doubt that the WORK can be completed for balance then unpaid.

Damage to another contractor or a third party.

Amounts which may be due the COUNTY for claims against CONTRACTOR.

Failure of CONTRACTOR to keep the record ("as-built") documents up to date.

Failure to provide update on construction schedule as required herein.

Site cleanup.

Failure to comply with CONTRACT DOCUMENTS.

Liquidated damages.

Legally permitted penalties.

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 Public Contract Code Section 22300, 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 22300, 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 22300(f).

10-9 PAYMENT AFTER ACCEPTANCE

After the WORK has been accepted by the COUNTY as provided in Section 6-9, "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 OF SUPERVISORS, 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 five (5) DAYS after acceptance of the CONTRACT, 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 these SPECIFICATIONS 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 five (5) DAYS, the proposed final estimate submitted to the CONTRACTOR shall become the final estimate, and within thirty (30) DAYS thereafter, the COUNTY will pay the entire sum so found to be due, provided that a release of liens and claims has been received from the CONTRACTOR pursuant to Civil Code section 8136. 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 five (5) 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 thirty (30) DAYS thereafter the COUNTY will pay the entire sum, if any, found due thereon, provided that a release of liens and claims has been received from the CONTRACTOR pursuant to Civil Code section 8136. 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." No payments, however, final or otherwise, shall operate to release CONTRACTOR or its sureties from the BONDS, or from any other obligation under this CONTRACT.

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 Two Hundred Dollars (\$200.00), no such payment shall be made.

PART 2 - SPECIAL PROVISIONS

SECTION 11 - SPECIAL PROVISIONS

11-1 PROJECT

The WORK to be done under this CONTRACT consists of furnishing all labor, materials, equipment, transportation and services necessary for the Construction of Waste Management Unit 6 Module H Base Liner System which includes earthwork; clearing, stripping and grubbing; revegetation and erosion control; placement of low permeability soil, gravel, sand, operations layer, HDPE geomembranes, geotextiles, geocomposites, geosynthetic clay liner; installation of HDPE piping and fittings.

11-2 PROJECT LOCATION AND ACCESS

The PROJECT is located at the YCCL, bounded by County Road 104 on the west and County Road 28H on the south, approximately three (3) miles northeast of the City of Davis. (See location map on cover sheet of Plans).

Yolo County Central Landfill

44090 County Road 28H

Woodland, CA 95776

Normal operating hours are Monday through Saturday 6:30 a.m. to 4:00 p.m., and Sunday 8:00 a.m. to 4:00 p.m.

As a COUNTY facility, any Work must follow Yolo County Code of Ordinances (see <https://www.yolocounty.org/general-government/board-of-supervisors/county-code>). The COUNTY is directing attention to the following COUNTY Ordinances while working within the Facility:

- Section 6-18.003 Prohibition of smoking in county buildings, on county property, and enclosed public places.

11-3 DEFINITIONS

[RESERVED]

11-4 SUBMISSION OF BIDS AND AWARD OF CONTRACT

[RESERVED]

11-5 PROSECUTION AND PROGRESS

Section 9-1 of the GENERAL PROVISIONS shall be amended to include the following:

The CONTRACTOR shall be required to commence WORK under this CONTRACT within SEVEN (7) DAYS after the date of receipt by the CONTRACTOR of NOTICE TO PROCEED.

Section 9-4 of the GENERAL PROVISIONS shall be amended to include the following:

The CONTRACTOR shall diligently prosecute the CONTRACT to completion One-Hundred (100) WORKING DAYS after the commencement of the WORK.

Section 9-5 of the GENERAL PROVISIONS shall be amended to include the following:

If the WORK required under this CONTRACT is not completed within the CONTRACT TIME, the CONTRACTOR shall pay to the COUNTY, as fixed and liquidated damages and not as penalty, the sum of One-thousand dollars (\$1,000) for each and every DAY of delay in finishing the WORK in excess of the CONTRACT TIME.

11-6 MEASUREMENT AND PAYMENT

Section 10-1 of the GENERAL PROVISIONS shall be amended to include the following:

Measurement for all WORK bid as a lump sum will be based upon the ENGINEER’S estimated percentage of the work completed. ENGINEER may request and CONTRACTOR shall provide any information necessary, such as material invoices for materials delivered to the job site but not yet installed to determine the percentage of work complete. All determinations as to the percentage of work complete by the ENGINEER are final. In no instance shall the percent complete exceed one hundred percent.

11-7 LABOR SURCHARGE

[RESERVED]

11-8 PROGRESS SCHEDULE

[RESERVED]

11-9 SURVEYS, LINES, AND GRADES

[RESERVED]

11-10 SITE FACILITIES

[RESERVED]

11-11 SITE UTILITIES

Section 5-11 of the GENERAL PROVISIONS shall be amended to include the following:

A source for electrical power shall be provided by the COUNTY. However, in the event that portable electric generators are required, the CONTRACTOR shall provide a protective lining and splash pad large enough to catch spilled fuel under the electric generator and its fuel storage area (as approved by the ENGINEER). All fuel spills shall be cleaned up in accordance with County, State, and Federal guidelines.

Section 5-12 of the GENERAL PROVISIONS shall be amended to include the following: The COUNTY shall permit the CONTRACTOR to use water obtained from an existing water storage reservoir.

11-12 DUST CONTROL

[RESERVED]

11-13 TRAFFIC CONTROL

[RESERVED]

11-14 EXISTING IMPROVEMENTS

Section 8-9 of the GENERAL PROVISIONS shall be amended to include the following:

The CONTRACTOR is advised that the construction of this PROJECT may entail working adjacent to areas that may include but are not limited to landfill leachate from the adjacent surface impoundment, pipelines, and pumping stations. The CONTRACTOR shall submit a Health and Safety plan to COUNTY prior to start of WORK.

11-15 DIFFERING SITE CONDITIONS

[RESERVED]

11-16 RECORD DOCUMENTATION

[RESERVED]

11-17 QUALITY CONTROL

[RESERVED]

11-18 ACCESS TO WORK BY OTHER AGENCIES

[RESERVED]

11-19 DIVERSION AND CONTROL OF WATER

[RESERVED]

11-20 COORDINATION OF WORK

Section 8-14 of the GENERAL PROVISIONS shall be amended to include the following:

CONTRACTOR is advised that the construction of the Waste Management Unit 6 Module H Base Liner System at the site could occur concurrently with the: Waste Management Unit H Aeration System. The CONTRACTOR is fully responsible for coordinating activities with COUNTY, including but not limited to: construction staging and material storage areas, material delivery, site access, utilization of on-site water, traffic control. No provisions for schedule or cost adjustments shall be provided by the COUNTY due to alleged delays or other alleged impacts arising from nearby activities. The COUNTY may extend the CONTRACT TIME or award non-working days if delays are caused by concurrent projects.

11-21 PAYMENT RETENTION

The second paragraph of Section 10-7 of the GENERAL PROVISIONS shall be replaced by the following:

The COUNTY shall retain five (5) percent of the estimated value of WORK done and acceptable materials incorporated into the WORK as a partial security for the fulfillment of the CONTRACT by the CONTRACTOR.

11-22 PROJECT FUNDING

Funding for this PROJECT is provided below:

| Funding Source | Percentage of Funding |
|--|-----------------------|
| Yolo County Sanitation Enterprise Fund | 100% |
| California State Grant | 0% |
| Federal Grant | 0% |

11-23 TERM AND TERMINATION

For COUNTY accounting purposes only, this CONTRACT shall terminate when a Notice of Completion is filed with the County Recorder of Yolo County and all payments have been made to the CONTRACTOR, and in no event later than June 30th, 2023. Notwithstanding the foregoing, any and all representations, warranties, indemnifications, and guarantees made in, required by, or given in accordance with the CONTRACT DOCUMENTS, as well as all continuing obligations under the CONTRACT DOCUMENTS or law, shall survive final payment, completion, and acceptance of the WORK or termination or completion of the AGREEMENT.

11-24 SOLE SOURCE

[RESERVED]

PART 3 - TECHNICAL PROVISIONS

Bound Separately

PART 4 - PROPOSAL AND **CONTRACT**

Bound Separately

PART 5 - PROJECT DRAWINGS

Bound Separately

PART 6 - CONSTRUCTION QUALITY **ASSURANCE PLAN**

Bound Separately

PART 3 – TECHNICAL PROVISIONS



TECHNICAL SPECIFICATIONS

WMU 6, MODULE H BASE LINER SYSTEM

YOLO COUNTY CENTRAL LANDFILL Woodland, California

Prepared for:

Yolo County Central Landfill
44090 Co Rd 28H,
Woodland, CA 95776

Prepared by:

Golder Associates Inc.
1000 Enterprise Way, Suite 190
Roseville, California 95678
(916) 786-2424

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DIVISION 1
GENERAL REQUIREMENTS

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1: GENERAL

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- C. Values of Unit Prices.
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- F. Description of payment for force account work.
- G. Measurement and payment descriptions for contract bid items.

1.02 MEASUREMENT

- A. Performed according to United States Standard measure.
- B. Based on actual units installed or neat line dimensions of work completed.

1.03 CALCULATION OF QUANTITIES

- A. Progress Payment Quantities:
 - 1. Contractor will compute all quantities of Work performed, or of materials and equipment delivered to the site for progress payment purposes.
 - 2. Owner may at any time verify quantities calculated by Contractor.
- B. Final Payment Quantities: Contractor will compute all quantities of Work performed, or of materials and equipment delivered to the site for final payment purposes. Calculation of final quantities will be as described in Paragraph 1.10. Owner may verify all quantities.
- C. Earthwork Quantities: Quantities of earthwork will be measured in their final installed location only. It is anticipated that soil processing, and stockpiling may require multiple handling of materials. Contractor shall include any associated costs

for multiple handling of materials or temporary stockpiling in bid items for other specified work.

1.04 PAYMENT

- A. In accordance with lump sum, unit prices, or force account rates shown on the Base Bid Schedule.
- B. Includes all costs for overhead and profit and for supplying materials, labor, equipment, and tools, necessary to complete the Work in accordance with the Technical Specifications, Construction Drawings, and Contract Conditions.

1.05 VALUES OF UNIT PRICES

- A. The number of units and quantities contained in the Bid Schedule of Unit Price Work are approximate only, and final payment will be made based on the actual number of units and quantities incorporated in the work or made necessary to complete the project.
- B. In the event that work and materials or equipment are required to be furnished to a greater or lesser extent than is indicated by the contract documents, such work and materials or equipment will be furnished in greater or lesser quantities.
- C. When the quantity of a pay item in this contract is an estimated quantity and where the actual quantity of such pay item varies more than twenty-five percent (25%) above or below the estimated quantity stated in this contract, an equitable adjustment shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above one hundred twenty-five percent (125%) or below seventy-five percent (75%) of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Owner shall, upon receipt of a written request for an extension of time within ten days from the beginning of such delay, if within such further period of time which may be granted by the Owner prior to the date of final settlement of the Contract, ascertain facts and make such adjustments for extending the completion date as in the Owner's judgment the findings justify.

1.06 CHANGES AND EXTRA WORK

- A. Changes and extra work will be measured and paid for in accordance with the requirements of this Section, or as provided in written change orders.

1.07 REJECTED MATERIALS

- A. Quantities of material wasted or disposed of in a manner not called for in the Technical Specifications; rejected loads of material, including material rejected after it has been placed by reasons of the failure of the Contractor to conform to the provision of the Technical Specifications; material not unloaded from the transporting vehicle; or material placed outside the limits indicated by the Construction Drawings or established by Owner; or material remaining on hand after completion of the Work, will not be paid for, and such quantities will not be included in the final total

quantities. No Compensation will be permitted for loading, hauling, and disposing of rejected material.

1.08 DEWATERING

- A. No measurement or payment will be made for dewatering.
- B. Include cost for this work in other bid items. Dewatering includes, but is not limited to:
 - 1. Control of surface water from storms and constructing any necessary temporary storm water drainage features.
 - 2. Controlling groundwater when excavating the preferred borrow site.
 - 3. Dewatering wet and moist areas to render them suitable for fill placement.
 - 4. Time period of dewatering starts when excavation begins, extends through construction and ends with final completion.

1.09 TEMPORARY CONTROLS

- A. No measurement or payment will be made for temporary controls, including but not limited to dust, pollution, traffic, temporary erosion, sediment control, and other temporary controls.
- B. Include cost for all temporary controls in other bid items.

1.10 MEASUREMENT AND PAYMENT DESCRIPTIONS FOR CONTRACT BID ITEMS

- A. Bid Item 1 – Mobilization/Demobilization
 - 1. Basis of Measurement: Lump Sum (LS)
 - 2. Basis for Payment: Contract unit price per lump sum. 50 percent payment for mobilization after 10 percent of the work is completed and 50 percent payment for demobilization at the completion of the project.
 - 3. Includes mobilization and demobilization of equipment, materials, and labor as required to complete the work, prepare Contractor's staging area including all temporary control facilities and temporary controls, set-up and maintenance of a field office, and any other administrative costs necessary to complete the work described herein. Fifty percent (50%) of the mobilization/demobilization will be paid after mobilization and completion of ten percent (10%) of the work. The balance of the payment will be made after submittal to and acceptance by Owner of the Record Drawings. The total amount quoted for mobilization/demobilization in the base bid schedule shall not exceed ten (10) percent of the total net base bid price.
- B. Bid Item 2 – Payment Bond
 - 1. Basis of Measurement: Lump Sum (LS)
 - 2. Basis for Payment: Payment made according to the requirements of Section 3-3 of the General Requirements.

- C. Bid Item 3 – Performance Bond
 - 1. Basis of Measurement: Lump Sum (LS)
 - 2. Basis for Payment: Payment made according to the requirements of Section 3-3 of the General Requirements.
- D. Bid Item 4 – Surveying and As-Built Drawings
 - 1. Basis of Measurement: Lump Sum (LS)
 - 2. Basis for Payment: payments made based on the number of surveys completed to provide as-built drawings required according to Section 5-8 and 11-9 of the General Requirements.
 - 3. Includes surveying services necessary to complete the work including survey control, layout of work, and as-built documentation.
- E. Bid Item 5 – General Fill
 - 1. Basis of Measurement: Cubic Yard (CY) based on topographic survey prior to and following earthfill. Initial survey to be completed following stripping.
 - 2. Basis for Payment: Contract unit price per cubic yard
 - 3. Includes all labor, materials, equipment, and incidentals necessary to place earthfill in accordance with the Technical Specifications and Construction Drawings.
- F. Bid Item 6 – Subgrade Preparation – Scarify and Recompact
 - 1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner subgrade.
 - 2. Basis for Payment: Contract unit price per square foot
 - 3. Includes all labor, materials, equipment, and incidentals necessary to perform subgrade preparation, to include minor clearing and grubbing, in accordance with the Technical Specifications and Construction Drawings.
- G. Bid Item 7 – Low Permeability Soil Liner Test Pad
 - 1. Basis of Measurement: Lump Sum (LS)
 - 2. Basis for Payment: 50 percent after completion of the test pad construction and 50 percent upon completion of test pad monitoring and receipt of conforming laboratory permeability test results.
 - 3. Includes all labor, materials, equipment, incidentals, and associated appurtenances necessary to construct the low permeability soil liner test pad in accordance with the Technical Specifications and Construction Drawings.
- H. Bid Item 8 – Excavation
 - 1. Basis of Measurement: Cubic Yard (CY) based on topographic survey prior to and following excavation. Initial survey to be completed following stripping.
 - 2. Basis for Payment: Contract unit price per CY.

3. Includes all labor, materials, equipment, incidentals, and associated appurtenances necessary for excavation in accordance with the Technical Specifications and Construction Drawings.
- I. Bid Item 9 – GCL
1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per square foot
 3. Includes all labor, materials, equipment, and incidentals necessary to install GCL in accordance with the Technical Specifications and Construction Drawings.
- J. Bid Item 10 – Secondary 40-Mil HDPE Geomembrane
1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per square foot
 3. Includes all labor, materials, equipment, and incidentals necessary to install Secondary 40-Mil HDPE geomembrane in accordance with the Technical Specifications and Construction Drawings.
- K. Bid Item 11 – Leak Detection System (LDS) Geocomposite Drainage Layer
1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per square foot
 3. Includes all labor, materials, equipment, and incidentals necessary to install LDS Geocomposite in accordance with the Technical Specifications and Construction Drawings.
- L. Bid Item 12 – LDS and Lysimeter Sump Systems, Bollards, Pipe Anchors
1. Basis of Measurement: Lump Sum (LS)
 2. Basis for Payment: 50 percent after completion of the LDS construction and 50 percent upon completion of Lysimeter Sump System.
 3. Includes all labor, materials, equipment, incidentals, and associated appurtenances necessary to construct the LDS and Lysimeter Sump Systems in accordance with the Technical Specifications and Construction Drawings.
- M. Bid Item 13 – Compacted Soil Foundation Layer
1. Basis of Measurement: Cubic Yard (CY)
 2. Basis for Payment: Contract unit price per cubic yard based on neat line thickness of 3 feet as shown on the Construction Drawings.
 3. Includes all labor, material, equipment, and incidentals necessary to install Compacted Soil Foundation Layer in accordance with the Technical Specifications and the Construction Drawings.

- N. Bid Item 14 – Low Permeability Soil Layer for WMU 6H
1. Basis of Measurement: Cubic Yard (CY)
 2. Basis for Payment: Contract unit price per cubic yard based on neat line thickness of 2 feet as shown on the Construction Drawings.
 3. Includes all labor, material, equipment, and incidentals necessary to install Low Permeability Soil in accordance with the Technical Specifications and the Construction Drawings.
- O. Bid Item 15 – Primary 60-Mil HDPE Geomembrane
1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per square foot
 3. Includes all labor, materials, equipment, and incidentals necessary to install Primary 60-Mil HDPE Geomembrane in accordance with the Technical Specifications and Construction Drawings.
- P. Bid Item 16 – LCRS Geocomposite
1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per square foot
 3. Includes all labor, materials, equipment, and incidentals necessary to install LCRS Geocomposite in accordance with the Technical Specifications and Construction Drawings.
- Q. Bid Item 17 – LCRS Gravel
1. Basis of Measurement: Cubic Yard (CY)
 2. Basis for Payment: Contract unit price per cubic yard based on neat line thickness of 9 inches as shown on the Construction Drawings.
 3. Includes all labor, material, equipment, and incidentals necessary to install LCRS Gravel in accordance with the Technical Specifications and the Construction Drawings.
- R. Bid Item 18 – 2-Inch Diameter HDPE LCRS Solid Injection Pipe
1. Basis of Measurement: Linear Foot (LF) based on topographic survey following completion of liner.
 2. Basis for Payment: Contract unit price per linear foot
 3. Includes all labor, material, equipment, and incidentals necessary to install 2-Inch Diameter HDPE LCRS Solid Injection Pipe in accordance with the Technical Specifications and the Construction Drawings.

- S. Bid Item 19 – 2-Inch Diameter HDPE LCRS Perforated Injection Pipe
 - 1. Basis of Measurement: Linear Foot (LF) based on topographic survey following completion of liner.
 - 2. Basis for Payment: Contract unit price per linear foot
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 2-Inch Diameter HDPE LCRS Perforated Injection Pipe in accordance with the Technical Specifications and the Construction Drawings.

- T. Bid Item 20 – 8 oz./sy Nonwoven Geotextile
 - 1. Basis of Measurement: Square Foot (SF) based on topographic survey following completion of liner.
 - 2. Basis for Payment: Contract unit price per square foot
 - 3. Includes all labor, materials, equipment, and incidentals necessary to install 8 oz./sy Nonwoven Geotextile in accordance with the Technical Specifications and Construction Drawings.

- U. Bid Item 21 – Sand for LCRS Drainage Trenches
 - 1. Basis of Measurement: Cubic Yard (CY)
 - 2. Basis for Payment: Contract unit price per cubic yard.
 - 3. Includes all labor, material, equipment, and incidentals necessary to install Sand for LCRS Drainage Trenches in accordance with the Technical Specifications and the Construction Drawings.

- V. Bid Item 22a – Operations Layer – 1 Foot Thick Soil Cover
 - 1. Basis of Measurement: Cubic Yard (CY). Section 4-3.2, Increases or Decreases in Quantities is not applicable to Bid Item 21a.
 - 2. Basis for Payment: Contract unit price per cubic yard based on neat line thickness of 1 foot as shown on the Construction Drawings.
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 1 Foot Thick Soil Cover in accordance with the Technical Specifications and the Construction Drawings.

- W. Bid Item 22b – Operations Layer – 2 Feet Thick Ground Wood Cover
 - 1. Basis of Measurement: Cubic Yard (CY). Section 4-3.2, Increases or Decreases in Quantities is not applicable to Bid Item 21b.
 - 2. Basis for Payment: Contract unit price per cubic yard based on neat line thickness of 2 feet as shown on the Construction Drawings.
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 2-Foot Thick Ground Wood Cover in accordance with the Technical Specifications and the Construction Drawings.

- X. Bid Item 23 – 6-Inch Diameter HDPE LCRS Pipe
 - 1. Basis of Measurement: Linear Foot (LF) based on topographic survey following completion of liner.
 - 2. Basis for Payment: Contract unit price per linear foot
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 4-Inch Diameter HDPE LCRS Pipe in accordance with the Technical Specifications and the Construction Drawings.
- Y. Bid Item 24 – 4-Inch Diameter HDPE LDS, Lysimeter, and LFG Pipes
 - 1. Basis of Measurement: Linear Foot (LF) based on topographic survey following completion of liner.
 - 2. Basis for Payment: Contract unit price per linear foot
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 4-Inch Diameter HDPE LDS/Lysimeter Pipe in accordance with the Technical Specifications and the Construction Drawings.
- Z. Bid Item 25 – Erosion Control Hydroseeding Exterior Slopes
 - 1. Basis of Measurement: Acre (AC)
 - 2. Basis for Payment: Contract unit price per acre
 - 3. Includes all labor, equipment, materials, and incidentals necessary to install erosion control hydroseeding on the exterior slopes of WMU 6H in accordance with the Technical Specifications and Construction Drawings.
- AA. Bid Item 26 – Perimeter Levee Road Aggregate Base
 - 1. Basis of Measurement: cubic yard (CY)
 - 2. Basis for Payment: Contract unit price per cubic yard
 - 3. Includes all labor, equipment, materials, and incidentals necessary to procure and install aggregate base on the perimeter levee roads in accordance with Caltrans Standard Specifications Section 26 and the Construction Drawings.
- BB. Bid Item 27 – 6-Inch Diameter HDPE Liquids Transmission Pipe
 - 1. Basis of Measurement: Linear Foot (LF) based on topographic survey following completion of liner.
 - 2. Basis for Payment: Contract unit price per linear foot
 - 3. Includes all labor, material, equipment, and incidentals necessary to install 6-Inch Diameter HDPE Liquids Transmission Pipe in accordance with the Technical Specifications and the Construction Drawings.
- CC. Bid Item 28 – Preparation for Electrical Leak Location Survey
 - 1. Basis of Measurement: Lump Sum (LS)

2. Basis for Payment: 50 percent after approval is given by the Engineer to commence electrical leak location survey and 50 percent after completion of a successful electrical leak location survey and receipt of said survey results that conform to the requirements of the Technical Specifications and the Construction Drawings.
3. Basis for Payment: Includes all labor, equipment, materials, and incidentals to prepare the WMU 6H geosynthetic liner system and associated earthen and granular materials for electrical leak location survey in accordance with the Technical Specifications and Construction Drawings.

DD. Bid Item 29 – Prepare Drainage and Erosion Control Plan

1. Basis of Measurement: Lump Sum (LS)
2. Basis for Payment: Payments for “Prepare Drainage and Erosion Control Plan” will be made as follows:
 - a. After the Drainage and Erosion Control Plan has been approved by the Engineer, 75 percent of the contract item price for “Prepare Drainage and Erosion Control Plan” will be included in the monthly progress estimate.
 - b. After acceptance of the contract in conformance with the provisions in Section 6-9, " Final Inspection, Field Acceptance and Acceptance by the Board," of the Standard Specifications, payment for the remaining percentage of the contract item price for “Prepare Drainage and Erosion Control Plan” will be made in conformance with the provisions in Section 10-9.1, "Final Payment and Claims."
3. Basis for Payment: The contract lump sum price paid for “Prepare Drainage and Erosion Control Plan” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the Drainage and Erosion Control Plan, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

EE. Bid Item 30 – Water Pollution Control

1. Basis of Measurement: Lump Sum (LS)
2. Basis for Payment: Payments for “Water Pollution Control” shall be made as follows:
 - a. 25% of the contract lump sum price will be paid with the first monthly progress payment, provided water pollution control measures are satisfactorily installed in accordance with the Drainage and Erosion Control Plan.
 - b. 50% of the contract lump sum price will be paid in proportion to number of elapsed working days during the progress pay period, as compared to the total number of working days allowed.
 - c. 25% of the contract lump sum will be paid with the final pay estimate, provided the water pollution control work has been satisfactorily completed, removed and disposed and the final annual report has been submitted and approved.

3. Basis for Payment: The contract lump sum price paid for “Water Pollution Control” shall include full compensations for furnishing all labor, equipment, and materials, and for doing all the work involved in preparing the CSMP, preparing all reports including annual reports, installing, constructing, maintaining, removing, and disposing of water pollution control practices, inspecting and documenting Drainage and Erosion Control Plan measures, including non-storm water management, management of irrigation water runoff from adjacent properties, and waste management of water pollution control practices, and no additional payment shall be made therefore.

FF. Bid Item 31 – Waste Excavation and Removal

1. Basis of Measurement: Cubic Yard (CY) calculated based on load count from haul vehicles
2. Basis for Payment: Contract unit price per cubic yard
3. Includes all labor, materials, equipment, and incidentals necessary to remove overbuilt waste along the tie-in point of WMU 6F and WMU 6H.

PART 2: PRODUCTS

Not Used

PART 3: EXECUTION

Not Used

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02110

SITE CLEARING, GRUBBING, AND STRIPPING

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the general material and construction requirements for clearing, grubbing and stripping of vegetation and topsoil associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork

1.03 REFERENCES

- A. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. Submit written notice of intent to perform clearing, grubbing, or stripping to CQA Engineer at least 7 days in advance of performing these activities.

PART 2: PRODUCTS

Not Applicable

PART 3: EXECUTION

3.01 PROTECTION

- A. Protect plant growth and features remaining outside of the project boundaries.
- B. Protect bench marks and existing work from damage or displacement.
- C. Maintain designated site access for vehicle traffic.
- D. Locate and protect existing utilities and monitoring wells. Damage caused to existing utilities or wells shall be repaired by the Contractor at no added cost to the Owner.

3.02 GENERAL CLEARING, GRUBBING AND STRIPPING REQUIREMENTS

- A. Clearing shall consist of cutting, removing, and disposing of all vegetation including any trees, snags, stumps, shrubs, limbs, and other vegetative growth. Clearing shall also include the removal and disposal of rubbish and any debris that is designated by Owner.

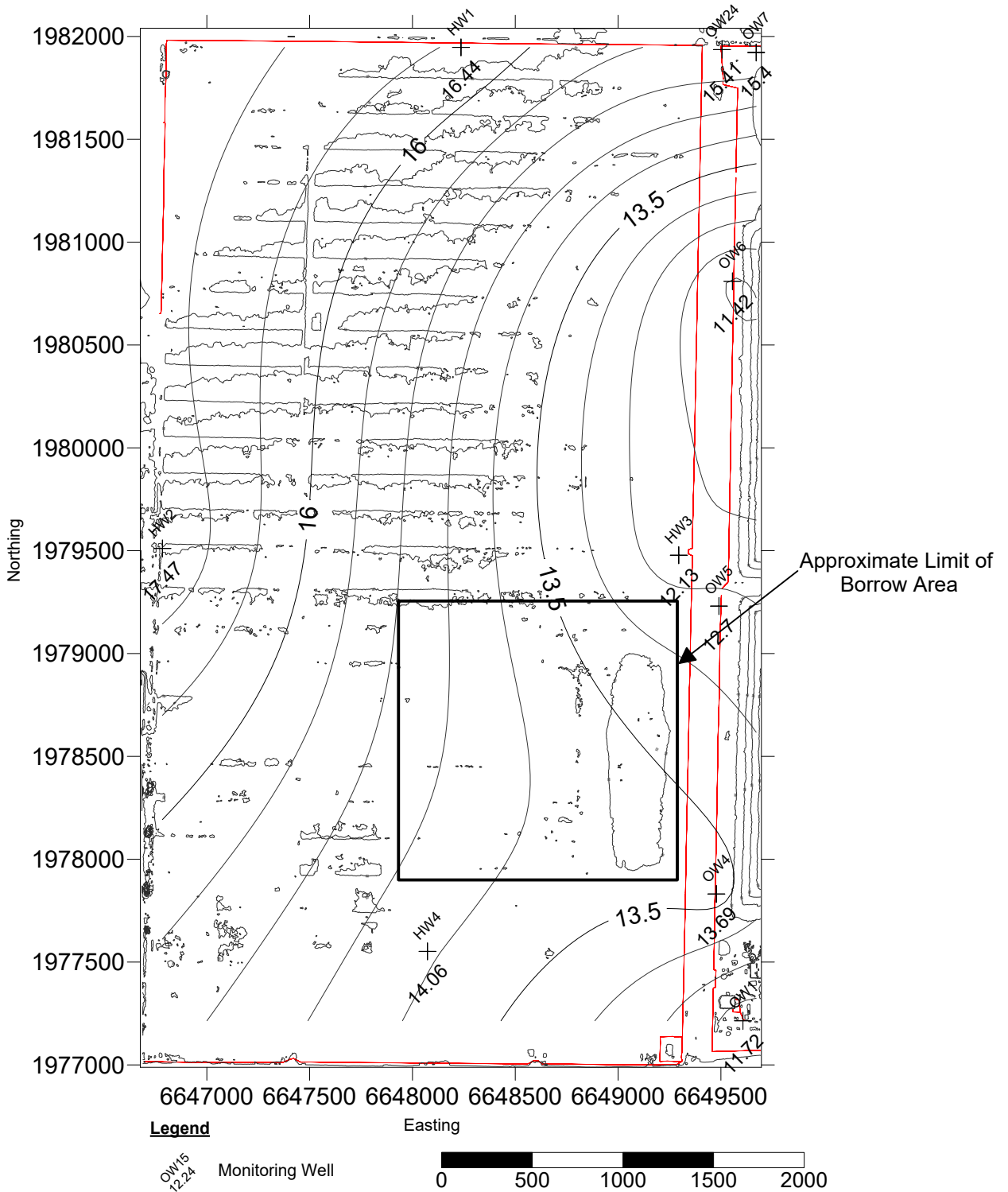
- B. Grubbing shall consist of the removal and disposal of wood or root matter below the ground surface remaining after clearing and shall include stumps, trunks, roots, or root systems to a minimum depth of 6 inches below the ground surface.
- C. Stripping shall include the removal and disposal of all organic sod, topsoil, plant growth and associated roots. Stripping shall extend to the bottom of the root zone.
- D. Contractor shall coordinate disposal of clearing and grubbing debris with the Owner. No burning of debris will be permitted.
- E. Topsoil and vegetation from the strippings will be stockpiled at the active disposal area which is located immediately to the west of the WMU 6H project area. All stockpiles shall be track-walked and graded to drain upon completion.
- F. All cut and fill areas will be cleared, grubbed, and stripped prior to filling or grading to design elevations.
- G. Conduct operations and maintain the project site to minimize dust creation and dispersion.

3.03 ADDITIONAL CLEARING AND STRIPPING REQUIREMENTS

- A. Borrow Area: Where vegetation is established, Contractor shall clear and strip to a minimum depth of 4-inches. Strippings shall be stockpiled at a location designated by the Owner.
- B. General Earthfill: Contractor shall clear and strip any vegetation to a depth of at least 4-inches or greater as required to remove vegetation, roots and organic topsoil. Strippings shall be stockpiled at a location designated by the Owner.

END OF SECTION

Figure 1
Groundwater Elevation Contour Map
Measurement Date 12-11-2018
Yolo County Central Landfill Borrow Site

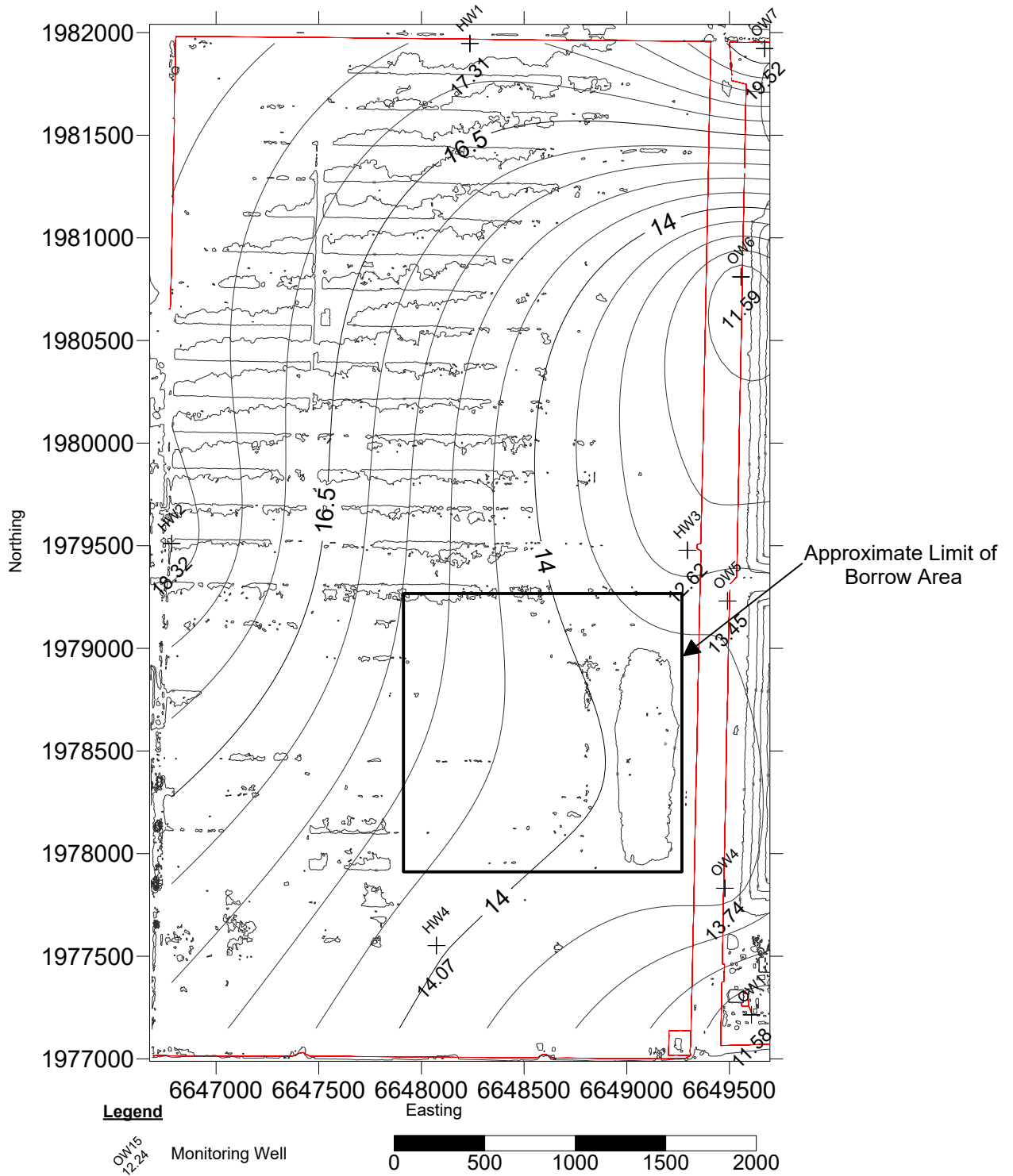


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 2
Groundwater Elevation Contour Map
Measurement Date 8-1-2018

Yolo County Central Landfill Borrow Site

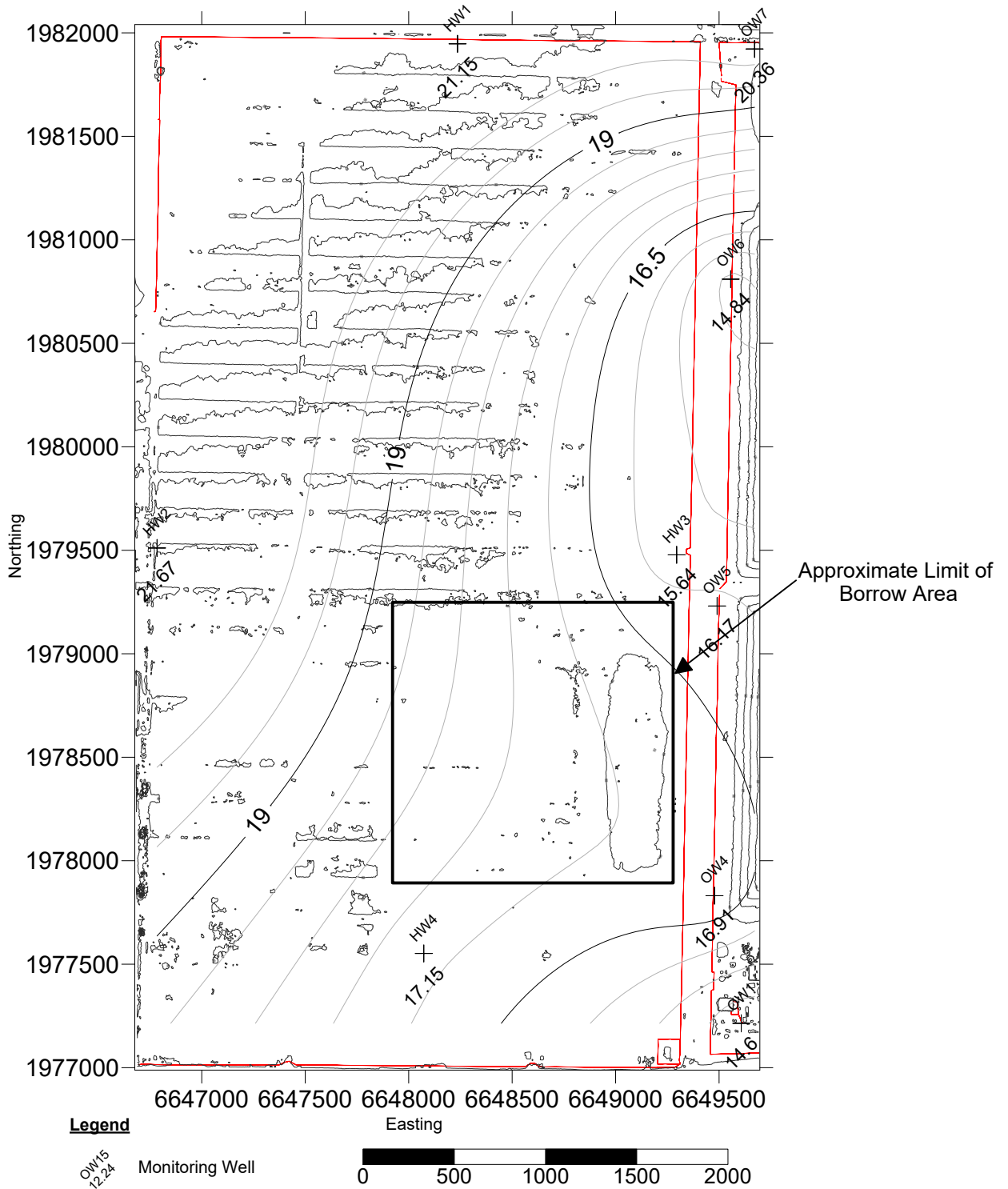


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

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Figure 3
Groundwater Elevation Contour Map
Measurement Date 6-5-2018

Yolo County Central Landfill Borrow Site

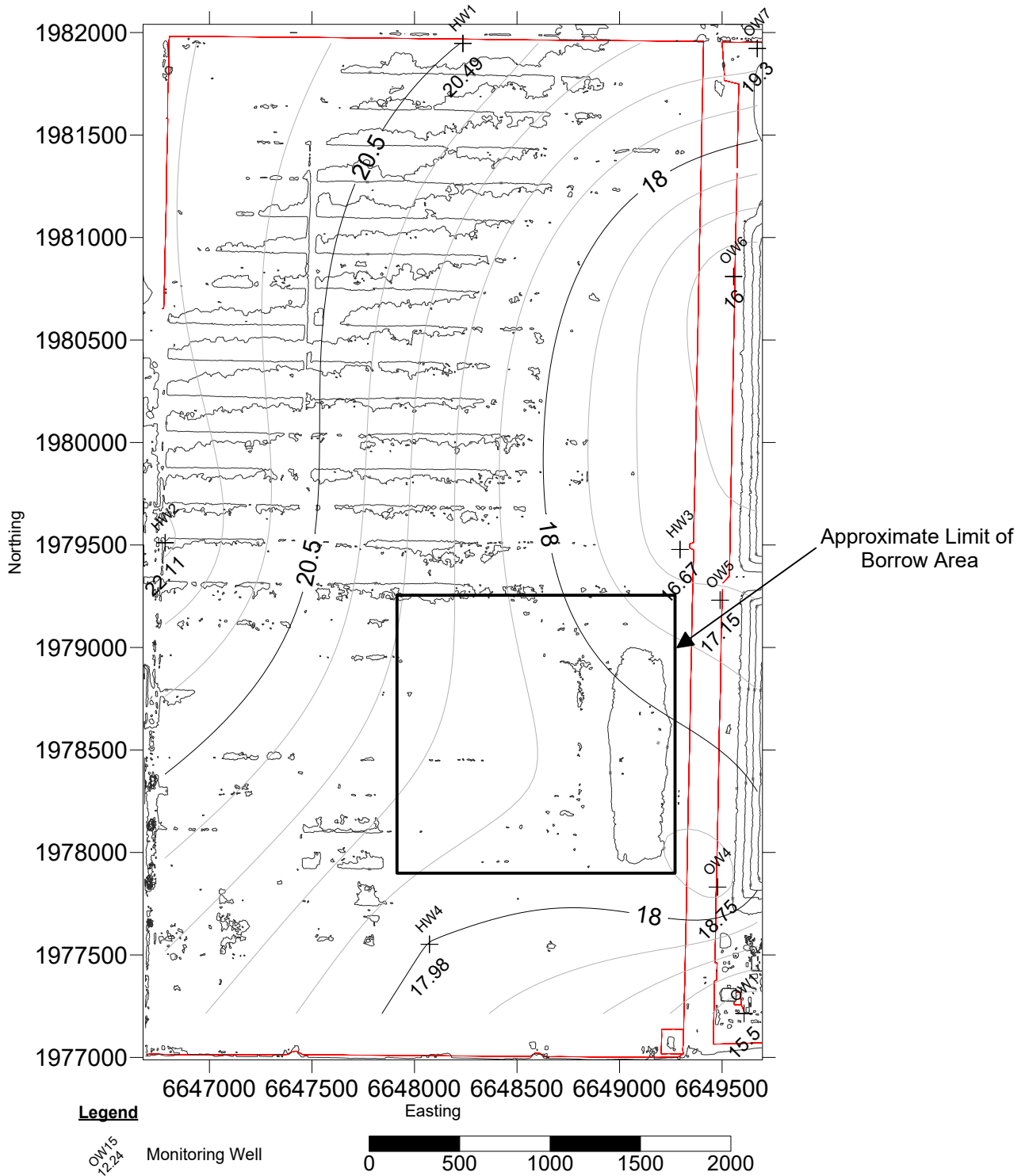


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 4
Groundwater Elevation Contour Map
Measurement Date 3-19-2018

Yolo County Central Landfill Borrow Site

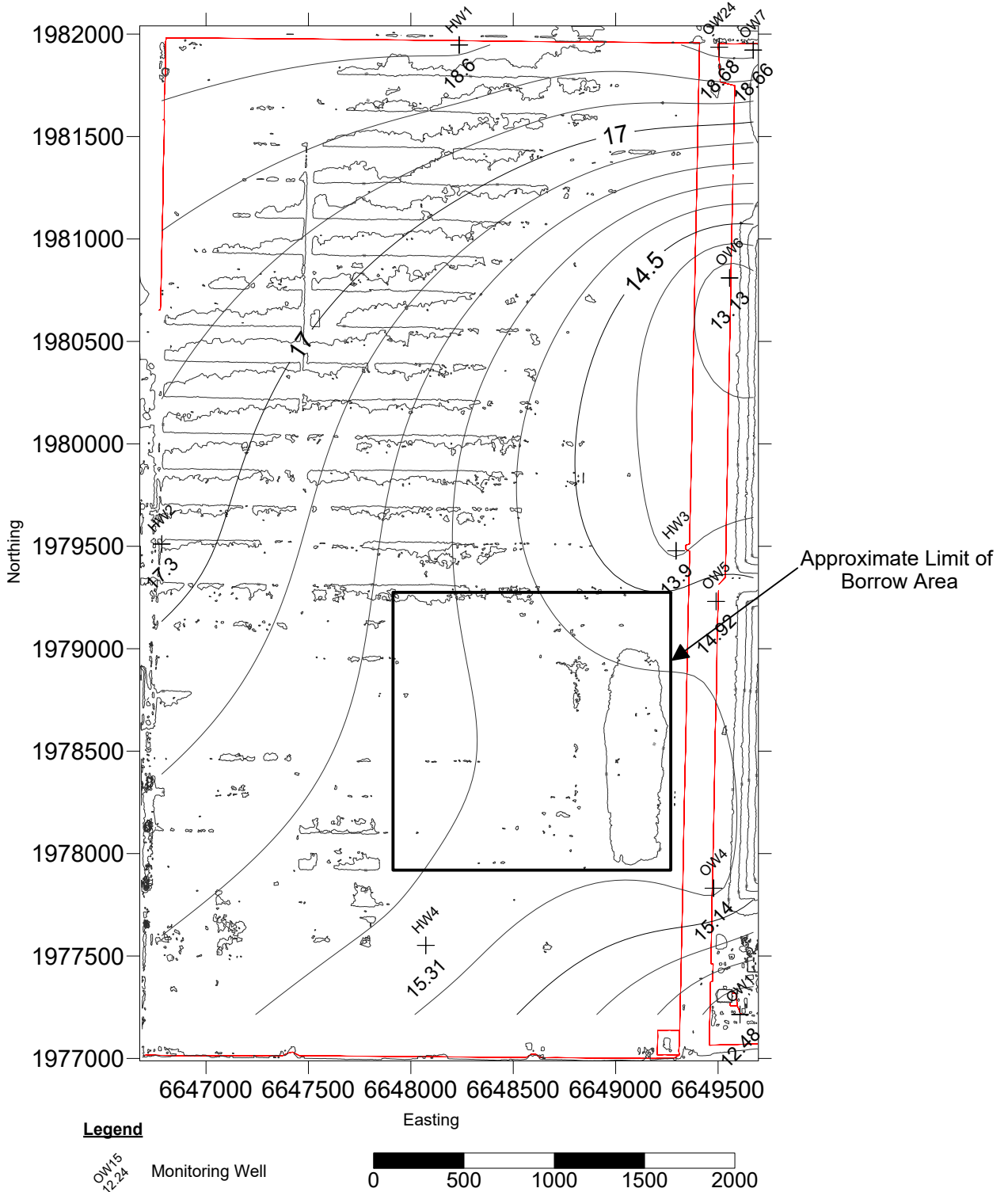


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 5
Groundwater Elevation Contour Map
Measurement Date 12-6-2017

Yolo County Central Landfill Borrow Site

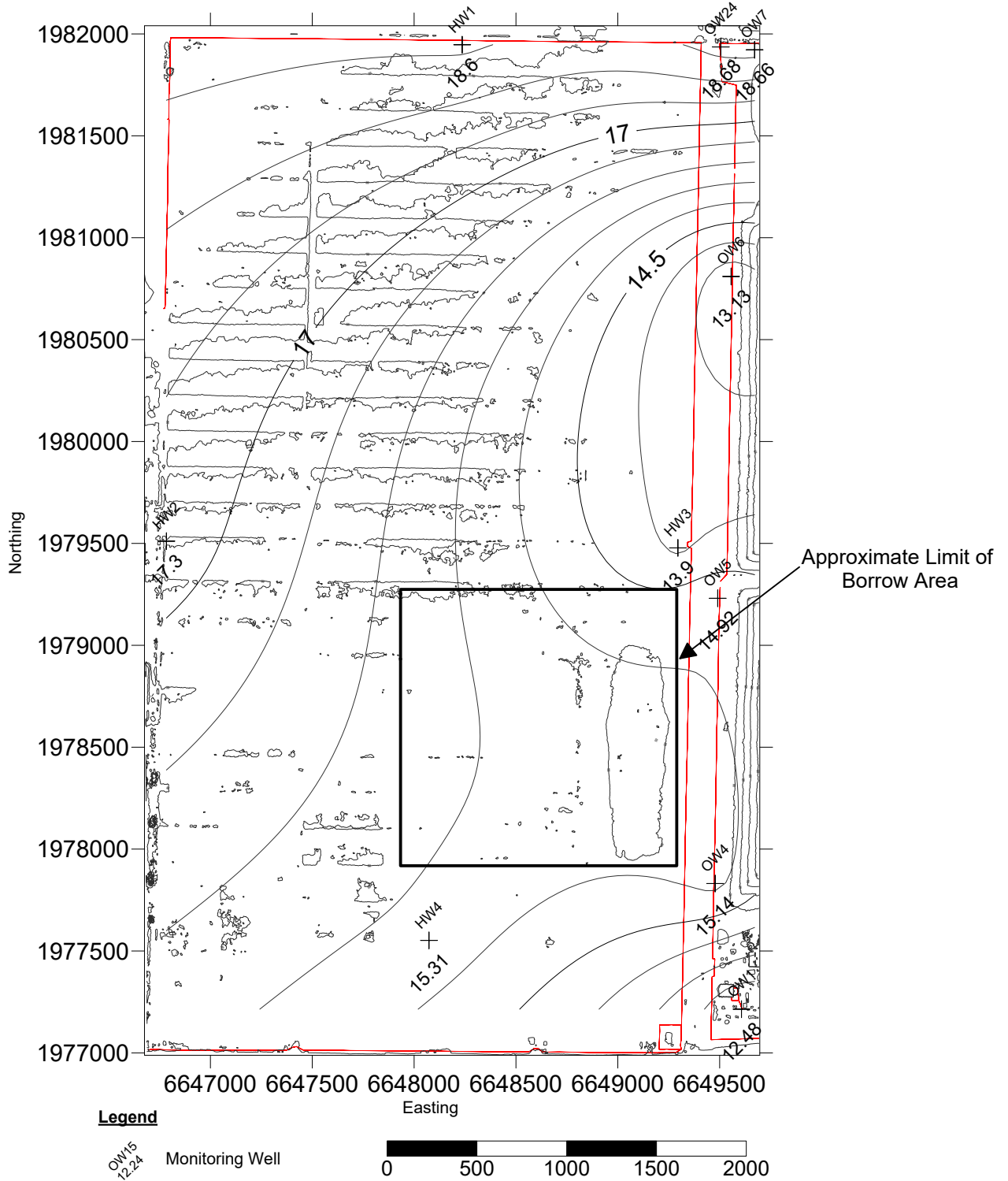


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD-1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 6
Groundwater Elevation Contour Map
Measurement Date 8-29-2017

Yolo County Central Landfill Borrow Site

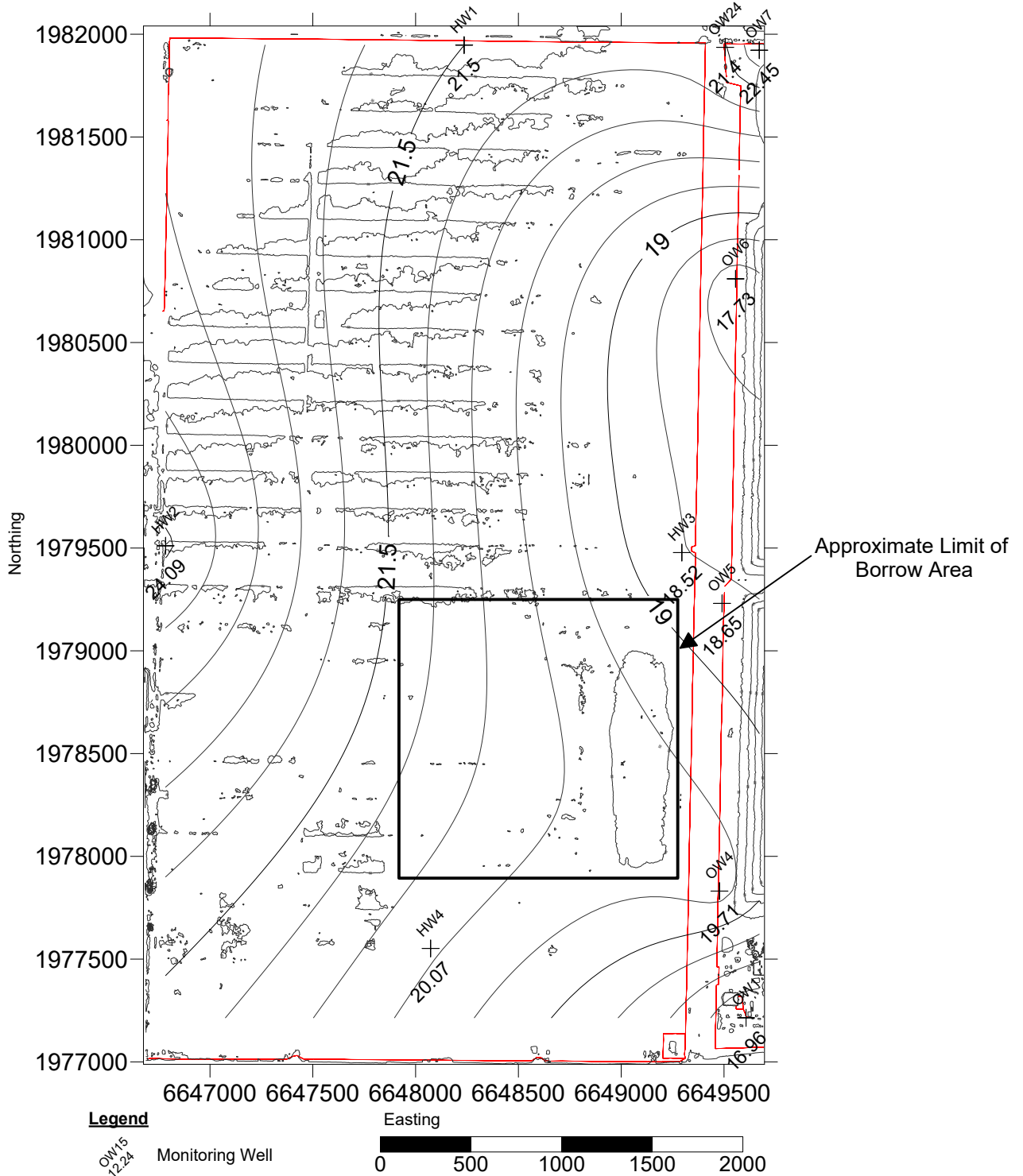


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 7
Groundwater Elevation Contour Map
Measurement Date 5-24-2017

Yolo County Central Landfill Borrow Site

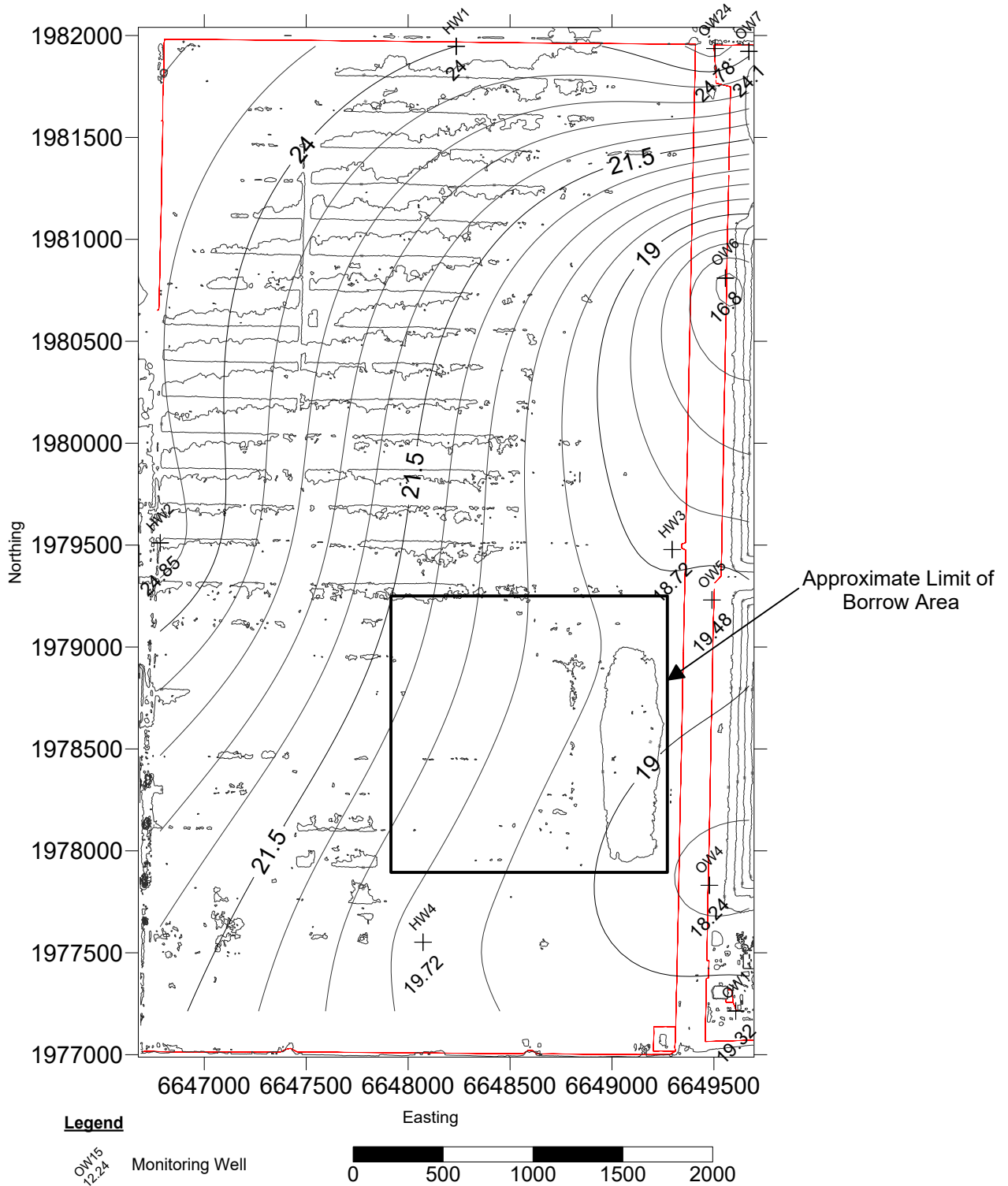


GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

Figure 8
Groundwater Elevation Contour Map
Measurement Date 2-22-2017

Yolo County Central Landfill Borrow Site



GROUNDWATER CONTOUR ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

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SECTION 02221

EARTHWORK

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for general earthworks including general fill placement, excavation, and subgrade preparation associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02110 - Site Clearing, Grubbing and Stripping
- B. Section 02222 - Foundation Soil and Low-Permeability Soil Layer
- C. Section 02223 – Gravel and Sand
- D. Section 02225 – Operations Layer
- E. Section 02751 - HDPE Geomembranes

1.03 REFERENCES

- A. Latest version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D1140 - Standard Test Method for Amount of Material in Soils Finer than No. 200 Sieve
 - 2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil In Place by Sand-Cone Method
 - 3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soils using Modified Effort
 - 4. ASTM D2216 - Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - 5. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes
 - 6. ASTM D2937 - Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method

7. ASTM D4220 - Standard Practices for Preserving and Transporting Soil Samples
8. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
9. ASTM D4643 - Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method
10. ASTM D6391 - Standard Test Method for Field Measurement of Hydraulic Conductivity Using Borehole Infiltration
11. ASTM D 6913 – Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
12. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods

B. Construction Quality Assurance Plan

1.04 SUBMITTALS

- A. Contractor shall notify CQA Engineer in writing a minimum of 7 days prior to starting work under this Section.
- B. Contractor shall submit copies of any permits that may be required to Owner prior to start of work.
- C. Submit a Health and Safety Plan to Owner.

1.05 QUALITY ASSURANCE

- A. Contractor shall comply with the CQA Plan.
- B. Observation, sampling and testing will be performed by the CQA Engineer to confirm that the materials and construction are in compliance with the requirements of these Construction Specifications. Contractor shall make allowances for sampling and testing by the CQA Engineer in both production and scheduling.

1.06 SAFETY

- A. Contractor is solely responsible for performing work in a safe manner and complying with all applicable local, state and federal codes, ordinances, laws, and regulations.

PART 2: PRODUCTS

2.01 GENERAL EARTHFILL

- A. General earthfill shall consist of soil free from significant amounts of organic materials, loam, wood, trash, or other deleterious materials. General fill shall not contain particles larger than 6 inches in the largest dimension. The upper six inches of the general earthfill (liner subgrade) shall consist of clayey soils classified as CH, CL or SC in accordance with the Unified Soils Classification System or soil approved by the CQA engineer. If the upper six inches does not meet this requirement, the Contractor shall over-excavate and replace with acceptable material at no cost to the Owner.

2.02 OTHER SOIL MATERIALS

- A. Low-permeability soil shall conform to the requirements of Section 02222.
- B. Foundation soil shall conform to the requirements of Section 02222.
- C. Gravel and sand materials shall conform to the requirements of Section 02223.
- D. Operations layer materials shall conform to the requirements of Section 02225.

PART 3: EXECUTION

3.01 EXCAVATION

- A. Take the necessary precautions to maintain the site in a condition that is relatively dry and free of standing water. Contractor shall be responsible for removing water that accumulates within the footprint of the disposal modules and the designated borrow area due to precipitation, groundwater or surface water run-on.
- B. Excavation shall be accomplished by methods which preserve the undisturbed state of the soils below the limits of the excavation. Soils which become soft, loose, or otherwise unsatisfactory for support of structures as a result of inadequate excavation, dewatering, or other construction methods shall be removed and replaced with suitable fill at no additional cost to the Owner.
- C. Temporary and final excavation slopes in the borrow area shall not be steeper than 3 horizontal to 1 vertical.
- D. Borrow source excavation shall be in accordance with Plan Sheet No.3 of the Construction Drawings.
- E. Contractors are advised of the potential for elevated groundwater levels within the borrow site. Figures 1 through 8 at the end of this section are provided for Contractors reference and represent observed groundwater elevations and calculated groundwater contours at the borrow site in 2017 and 2018.

- F. Contractor shall be aware that there is the possibility of exposing buried cultural resources, including Native American burials. Prior to beginning excavation, training will be provided to Contractor's supervisory and excavation personnel to alert them to the need to stop excavation at the discovery and the procedures to follow regarding protection and notification of the County and archaeologist. Contractor must comply with all aspects of this training.
- G. Contractors are advised of the presence of occasional small sand lenses within the borrow site. If sand lenses are encountered, this material would be unsuitable for low-permeability earthfill and may not be suitable for the upper 6-inches of general earthfill. There shall be no additional payment for isolating sandy material unsuitable for low-permeability earthfill or the upper 6-inches of general earthfill.
- H. If the bottom of any excavation within the Module 6 area is taken below the limits shown on the Drawings, it shall be refilled by the Contractor and compacted in accordance with the requirements for general fill in this Section.

3.02 TRANSPORTATION

- A. The haul route is specified on Sheet 3 of the construction Drawings. Following conclusion of excavation activities, Contractor shall return this route to its original condition to the satisfaction of the County.

3.03 PREPARATION FOR FILL PLACEMENT

- A. Before placing fill materials, prepare the area by clearing existing obstructions, vegetation, and debris in accordance with Section 02110 – Site Clearing, Grubbing, and Stripping.
- B. Maintain and operate proper and adequate surface drainage to the satisfaction of the CQA Engineer in order to keep the site dry and in such conditions that placement and compaction of fill may proceed unhindered by saturation of the area.
- C. If surface soil in fill placement areas is poorly compacted or excessively soft to a depth of greater than 6-inches, remove affected soil to competent material and replace in accordance with general fill placement methods.

3.04 GENERAL FILL PLACEMENT

- A. Obtain fill materials from the required excavation or borrow areas.
- B. The fill shall be placed to the lines, grades and elevations shown on the Drawings or as directed in the field by the CQA Engineer.
- C. Prior to general fill placement, the subgrade shall be lightly scarified and moisture conditioned to within -3% to +4% of the optimum moisture content as determined by ASTM D 1557 and compacted to provide a firm and non-yielding surface.

Soft or excessively wet areas shall be over-excavated a minimum of two feet to firm material and shall be backfilled and compacted with general fill.

- D. The fill material shall be placed and compacted in loose lifts that result in a nominal compacted thickness of 6 inches. The first lift of anchor trench backfill may be placed with a maximum loose lift thickness of 12 inches.
- E. Each lift of general fill shall be compacted to at least 90 percent of the maximum dry density and to a moisture content within -3% to +4% of optimum as determined by ASTM D1557. The first lift of anchor trench backfill shall be compacted to at least 85 percent of the maximum dry density according to ASTM D1557 at the moisture content range given above.
- F. The Contractor is responsible for moisture conditioning the borrow soils to the required moisture range. This may include drying for overly wet soils or may include addition of moisture for drier soils.
- G. If new general fill is placed next to existing general fill, each lift of new general fill shall be keyed into the existing general fill.
- H. In the event of a failing test, supplemental testing will be performed to define the area that has been inadequately compacted. Material not meeting specified compaction criteria shall be reworked or replaced, at no additional cost to the Owner, and then retested prior to subsequent lift placement over the area.
- I. Grade and restore areas inadvertently disturbed during construction to their original grade and profile.
- J. Water used for moisture conditioning shall be obtained from sources approved by the Owner.
- K. The entire area shall be left in a manner to promote run-off at the end of each day.
- L. Final grading shall be completed to the lines and grades shown on the Drawings and within the specified tolerances.
- M. General fill placed for perimeter berm slopes shall be over-built and trimmed back to finish grades to ensure the general fill at the slope surface meets compaction requirements. The final surface shall be smooth, firm, non-yielding, and free from debris or other deleterious material.
- N. Where finish grades require seeding, final grades shall be track-walked.

3.05 LINER SUBGRADE PREPARATION

- A. The upper six inches of the general earthfill shall consist of clay soils classified as CH, CL, SC in accordance with the Unified Soils Classification System, or soil approved by the CQA Engineer. The final surface of the liner subgrade shall not contain particles larger than 1/2-inch in the largest dimension. Contractor shall

use hand-labor as necessary to remove rocks larger than 1/2-inch from the subgrade surface. Prior to acceptance of the liner subgrade, the CQA Monitor shall inspect the surface and identify areas not meeting this requirement. Contractor shall remove the upper six inches of the liner subgrade and replace with material classified as CH, CL, SC, or soil approved by the CQA Engineer in such identified areas.

- B. Where the liner subgrade has been constructed during a previous summer, or if the liner subgrade has been exposed to wet weather, Contractor shall scarify, moisture condition and recompact the upper six inches of the subgrade surface to ensure that underlying soils meet the compaction and moisture content requirements set forth in this Section. Additionally, Contractor shall re-grade the surface to meet the grading tolerances identified in this Section.

3.06 TOLERANCES

- A. All material limits shall be constructed within a tolerance of ± 1.0 ft for horizontal state plan coordinates, ± 0.1 ft vertical for reference to mean sea level (MSL), and ± 0.1 ft where dimensions are shown or specified as a minimum. All grading shall be performed to maintain slopes and drainage as shown on the Drawings.
- B. A Surveyor licensed in the State of California shall prepare as-built survey record drawing to confirm that the tolerances are as required. The as-built documentation shall be reviewed by the CQA Engineer for approval prior to placement of subsequent layers. As-built documentation is required for finished subgrade.

3.07 DUST CONTROL

- A. The Contractor is required to implement dust control measures as necessary to minimize dust generation during all construction activities.

END OF SECTION

SECTION 02222

FOUNDATION SOIL AND LOW-PERMEABILITY SOIL LAYER

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the production, placement, and trimming of the foundation and low-permeability soil layer materials associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02751 - HDPE Geomembranes
- C. Section 02756 – Geosynthetic Clay Liner

1.03 REFERENCES

- A. Latest Version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D854 - Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
 - 2. ASTM D1140 - Standard Test Methods for Amount of Material in Soils Finer than No. 200 Sieve
 - 3. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method
 - 4. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soils Using Modified Effort
 - 5. ASTM D1587 - Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
 - 6. ASTM D2216 – Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - 7. ASTM D2937 – Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method
 - 8. ASTM D4220 - Standard Practices for Preserving and Transporting Soil Samples

9. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
10. ASTM D4643 – Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method
11. ASTM D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
12. ASTM D 6913 – Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
13. ASTM D6391 - Standard Test Method for Field Measurement of Hydraulic Conductivity Using Borehole Infiltration
14. ASTM D6938 – Standard Tests Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear-Methods (Shallow Depth)

B. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. The Contractor shall submit a detailed plan for the preparation of the low-permeability soil material, including a description of the equipment and procedures to be used and methods for monitoring gradation and moisture conditioning. This plan shall be approved by the Owner prior to the start of low-permeability soil production.
- B. Notify CQA Engineer in writing at least 7 days in advance of performing work under this section.

1.05 QUALITY ASSURANCE

- A. The CQA Engineer shall test the low-permeability soil material during production and following placement in accordance with the CQA Plan. The Contractor shall make allowances for sampling and testing by the CQA Engineer in both production operations and schedule.

PART 2: PRODUCTS

2.01 FOUNDATION SOIL AND LOW-PERMEABILITY SOIL MATERIALS

- A. The foundation soil and low-permeability soil materials shall consist of a relatively homogeneous fine-grained soil. The low permeability soil shall be classified as an SC, CL, or CH material by the CQA Engineer unless otherwise directed by the Owner. Material used for low-permeability soil material shall meet the following minimum requirements:

| | |
|-------------------------------|--------|
| Percent Passing No. 200 Sieve | ≥30 |
| Plasticity Index | >10 |
| Maximum Particle Size | 1 inch |

- B. The compacted low-permeability soil for the WMU 6H liner shall have an in-situ hydraulic conductivity equal to or less than 1×10^{-7} cm/sec as measured by ASTM D5084. To achieve this permeability requirement, the material properties may need to be more stringent than indicated in Article 2.1.A of this Section.
- C. The low-permeability soil materials shall be prepared by the Contractor and tested by the CQA Engineer in compliance with the CQA Plan. Testing will be done to determine fines content, Atterberg limits, and permeability. The Contractor shall make the low-permeability borrow source available to the Engineer at all times for sampling, testing, or visual observation.
- D. The foundation layer material shall not be subject to the permeability requirements of Articles 2.01.B and 2.01.C.
- E. The foundation soil and low-permeability soil materials shall be free of organics, foreign debris, rocks greater than 1-inch in diameter, and other deleterious material.

PART 3: EXECUTION

3.01 LOW-PERMEABILITY SOIL PREPARATION

- A. The low-permeability soil material shall be mixed to achieve a homogenous material. The Contractor shall break up, crush, or use any other process approved by the Owner that will produce the required properties.
- B. The Contractor shall segregate and obtain low-permeability soil material from Owner designated borrow areas.

3.02 MOISTURE CONDITIONING

- A. The prepared low-permeability soil materials shall be moisture conditioned to a moisture content equal to or greater than +3% of optimum as determined by ASTM D1557. This moisture content may be modified by the CQA Engineer during the pre-construction testing and test pad construction (if required).
- B. The foundation layer soil materials shall be moisture conditioned to a moisture content within -3% to +1% of optimum as determined by ASTM D1557.
- C. The moisture content of the material shall be uniform. If wet zones are encountered within the low-permeability or foundation soil materials, they shall be allowed to dry or mixed with surrounding material. Conversely, if dry zones are encountered within the low-permeability soil materials, they shall be moisture

conditioned and mixed with the surrounding material.

3.03 SUBGRADE PREPARATION

- A. The surface of the soil liner subgrade shall be graded to lines, grades, and tolerances shown on the Drawings.

3.04 PLACEMENT AND COMPACTION

- A. The preliminary compaction window for the low-permeability soil is defined by the following:
 - 1. A minimum moisture content range of equal to or greater than +3% of optimum per ASTM D1557. Meeting compaction at a higher moisture content in the range of the compaction window may be more difficult to achieve than at a lower moisture content.
 - 2. A minimum relative compaction of 92 percent as determined by ASTM D1557.
 - 3. A density greater than that represented by a line between a degree of saturation of 84 percent at 92 percent relative compaction and a degree of saturation of 83 percent at 93 percent relative compaction.
- B. Prior to production, the CQA Engineer shall confirm and/or modify the above preliminary compaction window based on the pre-construction testing and the results of the test pad.
- C. The foundation layer and low-permeability soil materials shall be placed and compacted in lifts not exceeding 8 inches loose or 6 inches compacted. The foundation layer shall be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557. The first lift of the foundation layer material shall be placed in a lift not exceeding 16 inches loose or 12 inches compacted. The bottom 6 inches of the foundation layer material shall not be subject to the compaction requirements specified in Article 3.02.B. The foundation layer material shall not be subject to permeability requirements specified in Article 2.01.B.
- D. The compacted low-permeability soil materials distribution and gradation throughout the liner shall be free from lenses, pockets, streaks, layers, or material differing substantially in texture or gradation from surrounding material.
- E. The moisture content of the low-permeability soil materials shall be uniform throughout each lift prior to and during compaction of the material. The Contractor shall be responsible for meeting moisture content, compaction, and material classification specifications. If the low-permeability soil material cannot be conditioned to meet the placement specifications, the material shall be removed and replaced with new low-permeability soil material.

- F. The Contractor shall place lifts of low-permeability soil materials to form a continuous monolithic material. If a lift of compacted low-permeability soil dries out during placement operations, the Contractor shall moisture condition the dry soil and recompact the lift prior to placement of additional lifts. If a lift of compacted low-permeability soil becomes overly wet due to precipitation or over watering, the Contractor shall allow the wet soil to dry or remove the material before placement of additional lifts. Each new lift shall be kneaded into the previously placed lift.
- G. All foundation layer and low-permeability soil materials shall be compacted with a self-propelled kneading, sheepsfoot or padfoot, compactor. Hauling and spreading equipment will not be considered as compaction equipment. The use of rubber-tired and/or smooth drum compaction equipment is not allowed.

3.05 GRADING

- A. The surface of the low-permeability soil layer shall be graded to the lines and grades shown on the Drawings. The surface of the low-permeability soil layer shall be rolled with a smooth drum roller or other suitable device to remove all ridges and surface irregularities. The CQA Engineer shall determine if the surface preparation is sufficient to place the HDPE geomembrane.
- B. All wheel ruts on the surface of the low-permeability soil layer shall be repaired by the earthworks Contractor prior to placement of the HDPE geomembrane. Methods for repair of the low-permeability soil layer are specified in Part 3.06 of this Section. Alternate methods for repair of the low-permeability soil layer will be allowed if submitted by the Contractor and approved by the Engineer.
- C. The Contractor shall maintain the low-permeability soil layer surface in a condition suitable for geomembrane installation until the surface is covered. Contractor shall apply water to the surface to prevent desiccation cracking. Desiccation cracks larger than 0.1 feet deep or 0.25 inches wide shall be excavated to the full depth of the crack and repaired.
- D. The maximum particle size that may be exposed on the low-permeability soil layer surface shall be 1/2-inch. Larger particles shall be removed by the Contractor and the low-permeability soil layer surface repaired in accordance with Article 3.06.
- E. Contractor shall repair all ruts, erosion rills or other damage that may occur prior to the placement of the geomembrane.

3.06 REPAIR OF THE LOW-PERMEABILITY SOIL LAYER

- A. The Contractor shall repair the surface of any areas identified by the CQA Engineer to be out of tolerance as follows:
 - 1. Scarify surface and spray with water

2. Place additional approved low-permeability soil materials
3. Compact low-permeability soil materials with self-propelled sheepsfoot type compactor
4. Trim surface to design grades and tolerances
5. Roll surface to remove irregularities

3.07 TOLERANCES

- A. The low-permeability soil layer shall be constructed to tolerance of -0.0 ft to $+0.2$ feet of the design elevation. The contractor shall also ensure that the foundation soil and low-permeability soil liner shall have a minimum thickness of 5.0 feet and that positive drainage grades are retained throughout the liner. The contractor shall also ensure that the low-permeability layer has a minimum thickness of 2.0 feet.
- B. A surveyor licensed in the State of California shall prepare an as-built survey record drawing to confirm that the tolerances are as required. The as-built record drawing shall be reviewed by the CQA Engineer for approval prior to placement of subsequent materials.

END OF SECTION

SECTION 02223

GRAVEL AND SAND

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for placement of the LCRS gravel and sand for LCRS trenches associated with construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02751 - HDPE Geomembranes
- C. Section 02752 – Geotextiles
- D. Section 02755 – Geocomposites

1.03 REFERENCES

- A. Latest Version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head)
 - 2. ASTM D5821 - Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
 - 3. ASTM D 6913 – Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- B. Construction Quality Assurance (CQA) Plan.

1.04 SUBMITTALS

- A. Submit gravel and sand samples at least 7 days prior to full-scale production for testing by CQA Engineer.
- B. Prior to commencement of LCRS gravel and sand placement, the Contractor will provide a resume for the grading equipment operator that demonstrates a minimum of 200 hours of experience spreading gravel and sand with tolerances similar to those required in this Section.

1.05 QUALITY ASSURANCE

- A. Perform in accordance with the CQA Plan.

PART 2: PRODUCTS

2.01 LCRS GRAVEL

- A. LCRS gravel shall be comprised of durable, sub-rounded gravel with no more than 25 percent of particles 3/8-inch or larger with more than one fractured face, as determined by ASTM D5821 and shall meet the following gradation requirements.

| US Sieve Size | Percent Passing |
|---------------|-----------------|
| 1/2" | 100 |
| 3/8" | 85-100 |
| No. 4 | 0-35 |
| No. 200 | 0-2 |

- B. LCRS Gravel shall exhibit a permeability of 1 cm/sec or greater.
- C. Construction samples shall be collected after delivery to the project, individual gradation construction tests not meeting the above gradation requirements may be accepted provided that they meet all of the following criteria:
1. The average gradation of all the construction tests meet the following gradation:

| US Sieve Size | Percent Passing |
|---------------|-----------------|
| 1/2" | 97-100 |
| 3/8" | 80-100 |
| No. 4 | 0-40 |
| No. 200 | 0-2 |

2. The percent passing the 3/4-inch sieve is 100 percent for any individual test.
3. The percent fines do not exceed 2 percent for any individual test.
4. The minimum permeability for the samples is 1 cm/sec (a permeability test is required for all samples not meeting the LCRS gravel gradation requirements).

2.02 SAND FOR LCRS TRENCHES

- A. Sand for LCRS trenches shall be clean, coarse, natural sand.
- B. Sand shall be nonplastic when tested in accordance with ASTM D 4318.
- C. Sand for LCRS trenches shall meet the following gradation requirements:

| US Sieve Size | Percent Passing |
|---------------|-----------------|
| 3/8" | 100 |
| No. 4 | 90-100 |
| No. 10 | 50 |
| No. 200 | 0-20 |

PART 3: EXECUTION

3.01 PLACEMENT OF LCRS GRAVEL

- A. Place gravel over the floor as shown in the Drawings.
- B. Equipment operating and material placement requirements:
 - 1. Grading equipment shall operate on a minimum thickness of 0.5 feet.
 - 2. Grading equipment for spreading the gravel shall be a low ground pressure dozer with a maximum track pressure of 5.5 psi with a maximum operating weight of 44,000 lbs.
 - 3. Grading equipment operator shall possess a minimum of 200-hours of experience spreading drainage gravel with tolerances similar to those required in this section.
 - 4. When operating over the geosynthetic liner, hauling equipment shall comply as follows:
 - a. Hauling equipment shall operate on the completed operations layer surface constructed to the minimum thickness requirements.
 - b. If operating on gravel, hauling equipment shall operate on temporary "roads" that are a minimum of three feet thick and 15 feet wide. These roads will be graded out by grading equipment that meets the above requirements.

5. Sharp turns by equipment shall not be permitted. If any hauling, placing, or grading equipment turns sharply or operates on less than required minimum thickness of gravel, the area below the equipment shall be carefully excavated to expose the underlying geomembrane. Damaged areas shall be repaired by Contractor in accordance with procedures described in Section 02751- HDPE Geomembranes at no cost to Owner.
 6. Sequence liner construction to minimize gravel push distances. Gravel shall be pushed a distance of more than 100 feet only if the total thickness of the gravel is greater than one foot at the time the gravel is pushed.
 7. Take precautions to prevent damage to underlying layers.
 8. Prevent excessive wrinkle development in the geosynthetic layers. Excessive wrinkles shall be cut out and repaired in accordance with procedures described in Section 02751- HDPE Geomembranes at no cost to Owner. To prevent wrinkles, the Contractor may place material in the early morning hours when the geosynthetic materials are cool and by monitoring and walking out wrinkles in the geosynthetic materials that appear at the face of the placement operations.
 9. Grading equipment shall be equipped with laser or global positioning satellite surveying technology that provides the operator real-time measurement of the dozer blade relative to the top of the liner.
- C. Protect HDPE pipe from mechanical damage.
- D. The Contractor shall maintain the final surface of the gravel layer free of ruts, and depressions until the overlying materials are placed.
- E. During placement of the gravel, the Contractor shall apply clean water to the gravel surface to help maintain adequate moisture for the electrical leak location survey. Contractor shall apply water as directed by the CQA Engineer.

3.02 PLACEMENT OF SAND FOR LCRS TRENCHES

- A. Sand bedding shall be placed to the lines and grades indicated in the Drawings and as specified herein.
- B. Sand bedding shall be placed in loose lifts and carefully tamped in place to a firm and unyielding condition that results in lift thicknesses of no greater than 8 inches.

3.03 TOLERANCES

- A. The final grade of the finished gravel for the LCRS layer shall be within 0.0 to +0.2 ft of the design thickness, and shall be within 0.0 to + 0.2 ft of the design elevations.
- B. As-built LCRS gravel record drawings:

1. A surveyor licensed in the State of California shall prepare an as-built, survey record drawing to confirm that the specified tolerances are met. The as-built record drawing shall be reviewed by the CQA Engineer for approval prior to placement of subsequent materials.
 2. As an alternative to surveying, thickness measurements may be taken, compiled and presented as an as-built LCRS gravel record drawing. Measurements shall be taken on a minimum 50-foot grid, including grade breaks, control point locations, and gravel limits. Thickness measurements shall be obtained from top-of-gravel and top-of-soil liner information at the same location. An acceptable method shall be to take a height reading relative to a laser setup on top of the gravel, then excavate a hole and take a reading below the gravel, where the difference between the measurements is the gravel thickness. Alternative thickness measurement methods may be used upon acceptance by the CQA Engineer.
- C. The final grade of the finished sand for the LCRS trenches layer shall support and allow the LCRS pipes to attain the required alignment and slope in accordance with the Construction Drawings.

END OF SECTION

SECTION 02225
OPERATIONS LAYER

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for placement of operations layer associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).
- B. Three different operations layer materials are presented with the final operations layer likely representing a combination of all three. The locations and quantity of each operations layer material used will be as directed by the Engineer.

1.02 RELATED SECTIONS

- A. Section 02221 – Earthwork
- B. Section 02223 – Gravel and Sand
- C. Section 02752 – Geotextiles
- D. Section 02755 – Geocomposites

1.03 REFERENCES

- A. Latest version of American Society for Testing and Materials (ASTM) standards
 - 1. ASTM D 6913 – Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- B. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. Provide written notice to CQA Engineer at least 7 days in advance of performing work under this Section.

1.05 QUALITY ASSURANCE

- A. Contractor shall comply with the CQA Plan.

PART 2: PRODUCTS

2.01 OPERATIONS LAYER MATERIAL

- A. Processed Wood Operations Layer: Processed wood operations layer material shall consist of a shredded and ground wood material prepared by the Owner. The operations layer material shall be relatively free of metal and construction debris, stumps, and other deleterious material. The maximum allowable particle size (largest dimension) is 6 inches.
- B. Soil Operations Layer: The operations layer material shall consist of soil free of metal and construction debris, stumps, and other deleterious material. The maximum allowable particle size (largest dimension) is 3 inches for material placed on the floor and 1-inch for material placed on the side slopes.
- C. Material shall form a firm, stable base when placed.

PART 3: EXECUTION

3.01 PLACEMENT

- A. The processed wood operations layer shall be placed over the areas indicated on the Drawings and as directed by the Engineer. The processed wood operations layer material shall be placed to achieve a total thickness of 2 feet. Processed wood shall be placed in a single 2-foot lift unless otherwise specified.
- B. The soil operations layer shall be placed over the areas indicated on the Drawings and as directed by the Engineer. The soil operations layer material shall be placed to achieve a total thickness of 1 foot.
- C. Prior to the placement of the operations layer material, final inspection of the geotextile and LCRS geocomposite drainage layer by the CQA Engineer will be made to verify integrity.
- D. Hauling and grading equipment shall operate on a minimum of 12 inches of operations layer material over the floor area. Hauling equipment shall have a maximum operating weight of 63 tons and a maximum ground pressure of 25 psi. Operations layer shall be pushed and spread using tracked grading equipment. Grading equipment shall have a maximum operating weight of 30 tons and a maximum ground pressure of 11 psi.
- E. Operations layer material placed on the side slopes shall be pushed from the bottom up the slope. In no case shall material be placed down the slope. Operations layer material placed on sides slopes shall be soil.
- F. Contractor shall apply water to the operations layer surface as required to maintain adequate moisture for the electrical leak location survey. Contractor shall apply water as directed by the CQA Engineer.

G. Operations layer placement shall be performed by the Contractor.

3.02 TOLERANCES

A. The final grade of the finished operations layer shall be within 0.0 and +0.1 ft of the design thickness and shall provide positive drainage. At the discretion of the Owner, the thickness may exceed the plus tolerance provided that positive drainage is maintained.

END OF SECTION

SECTION 02725

HDPE PIPE AND FITTINGS

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the material and construction requirements for the HDPE pipe associated fittings and appurtenances with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02223 – Gravel and Sand
- C. Section 02751 - HDPE Geomembranes
- D. Section 02752 - Geotextiles
- E. Section 02755 – Geocomposites
- F. Section 02756 – Geosynthetic Clay Liner

1.03 REFERENCES

- A. Latest version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM F1417-11A – Standard Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air
 - 2. ASTM D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique
 - 3. ASTM D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
 - 4. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics
 - 5. ASTM F2620 – Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

6. ASTM D2837 - Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Materials
 7. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material
 8. ASTM F714 - Standard Specification for Polyethylene (PE) Plastics Pipe (SDR-PR) Based on Outside Diameter
- B. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. Submit to Owner written warranties obtained from Pipe Manufacturer and the Pipe Installer against defects in material and workmanship. Warranty conditions proposed by the Pipe Manufacturer or Pipe Installer concerning limits of liability will be evaluated and must be acceptable to the Owner.
- B. Submit detailed shop drawings of all HDPE pipe and fittings, a list of materials to be furnished, and the names of the suppliers. Submittals shall be made at least 7 days before the start of work.
- C. Submit manufacturer's quality control certificate for the HDPE pipe product showing the following:
 1. Certificate stating the specific resin, its source and properties.
 2. Certification that reclaimed material added to the resin does not exceed 10 percent by weight.
 3. Certification that the pipe meets the minimum physical property requirements.

PART 2: PRODUCTS

2.01 HDPE MATERIALS

- A. Specific gravity, as determined by ASTM D1505 shall be at least 0.94.
- B. Carbon black content, as determined by ASTM D1603 shall be at least 2.0 percent.

2.02 HDPE PIPE AND PIPE FITTINGS

- A. All HDPE pipe and fittings shall comply with ASTM F714 and ASTM D3350.

- B. All HDPE pipe and fittings shall be polyethylene Type III piping manufactured from resin with a cell classification of 345464 C/E per ASTM D3350. The pipe shall have a minimum hydrostatic design basis rating of 1,600 psi (ASTM D2837).
- C. All HDPE pipe and fittings shall have a maximum Standard Dimension Ratio (SDR) as specified on the drawings.
- D. HDPE pipe shall be furnished non-perforated or perforated as specified on the Drawings.
- E. HDPE pipes and fittings shall be homogeneous throughout and free of visible cracks, holes, (except as noted on the Drawings), blisters, bubbles, undispersed raw materials, or any foreign inclusions or other deleterious effects.
- F. Fittings at the ends of pipes shall consist of HDPE end caps unless indicated otherwise on the Drawings.
- G. Pipe elbows shall be manufactured to the angle specified on the plans. Contractor shall allow for a minimum 4-week lead time during procurement of custom pipe fittings.

PART 3: EXECUTION

3.01 INSTALLATION

A. HDPE PIPE

1. All HDPE pipe and fittings shall be installed in accordance with the manufacturer's recommendations.
2. Foreign material shall be removed from the interior of all pipe and fittings prior to welding.
3. All joining or coupling of pipe sections shall be accomplished by thermal butt fusion in accordance with ASTM F2620. No solvent or adhesive welding will be allowed. Field-cutting of pipes, where required, shall be made with a machine specifically designed for cutting pipe. Cuts shall be carefully made, without damage to pipe or lining, so as to leave a smooth end at right angles to the axis of the pipe
4. All pipe and fittings shall be laid or placed to the lines, grades, and elevations, as shown on the Drawings
5. No pipe shall be placed until the Engineer has approved the bedding conditions

6. Blocking under piping shall not be permitted unless specifically accepted by the Engineer for special conditions
7. Place 60-mil HDPE geomembrane rub sheet beneath pipe joints including all flange fittings. Rub sheet shall measure at least 2-foot by 2-foot in area
8. Pipe boots to be secured to pipe by extrusion welding

3.02 TOLERANCES

- A. The Contractor shall be responsible for installing all HDPE piping within the following tolerances:
 1. Horizontal tolerance: 0.5 ft maximum
 2. Vertical tolerance: 0.1 ft maximum
 3. Maintain positive grades - no reverse slopes allowed at any location.
- B. A Surveyor licensed in the State of California shall prepare as-built survey record drawing to confirm that the tolerances are as required.

3.03 PRESSURE TESTING OF SOLID PIPE

- A. The specified test pressures shall be measured at a location approved by the CQA Engineer.
- B. Each pipeline shall be adequately braced and supported before tests are made.
- C. Pipelines that have no valves shall be closed with blind flanges or caps on the ends of the section to be tested.
- D. Tests shall be made before the piping has been enclosed in any manner that will prevent inspection during the test.
- E. Leakage testing for the leachate collection system trunk line shall be performed according to ASTM F1417-11a. The testing begins by pressurizing piping to 4 psig. Then allow the pressure to stabilize at a minimum of 3.5 psi. Measure the length of time it takes to drop 1 psig and the time to drop 0.5 and compare to the acceptable times listed in the ASTM standard. If it takes less than 7:25 (min:sec) to drop 1 psig it fails assuming a 520-foot long solid pipe length. If it takes less than 3:43 (min:sec) to drop 0.5 psig it fails assuming a 520-foot long pipe. If tested pipe length is longer than 520 feet, recalculate the acceptable time based on the ASTM. Measure the pressure using a gauge reading 0-10 psig. A soap and water solution (leak detection fluid) must be applied to all joints and the joints inspected for leakage by the formation of bubbles at the point of leakage. Any leaks detected must be repaired even if the

test meets the set requirements. All joints and connections shall be visually inspected for leaks after applying the leakage detecting fluid. The CONTRACTOR shall regulate the test pressure such that when pressurizing any PE line with air, the test pressure shall never exceed 9 psig

- F. The CONTRACTOR, at his own expense, shall make necessary repairs or replacements in accordance with the Specification. Repairing and testing shall be repeated until the pipeline installation conforms to the specified requirements and is acceptable to the ENGINEER
- G. After the test has been concluded, the pipeline shall be restored to a condition satisfactory to the ENGINEER
- H. It is intended that piping, whether tested after installation or not, shall be air-tight and free from leaks. Each leak which is discovered within one year after final acceptance of the work by the COUNTY shall be repaired by and at the expense of the CONTRACTOR

END OF SECTION

SECTION 02751

HDPE GEOMEMBRANES

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the manufacture, supply, installation, and quality control (QC) of High-Density Polyethylene (HDPE) geomembranes associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02222 – Foundation Soil and Low-Permeability Soil Layer
- C. Section 02223 – Gravel and Sand
- D. Section 02225 - Operations Layer
- E. Section 02725 - HDPE Pipe and Fittings
- F. Section 02752 - Geotextiles
- G. Section 02755 - Geocomposites

1.03 REFERENCES

- A. Latest Version of American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D638 – Test Method for Tensile Properties of Plastics
 - 2. ASTM D746 – Test Method for Determination of Low Temperature Brittleness Properties
 - 3. ASTM D792 – Standard Test Methods for Density and Specific Gravity of Plastics by Displacement
 - 4. ASTM D1004 – Test Method for Initial Tear Resistance of Plastic Film and Sheeting
 - 5. ASTM D1204 – Test Method for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperature
 - 6. ASTM D1238 – Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer

7. ASTM D1505 – Standard Test Method for Density of Plastics by Density-Gradient Technique
8. ASTM D1603 – Test Method for Carbon Black in Olefin Plastics
9. ASTM D1693 – Test Method for Environmental Stress Crack Resistance
10. ASTM D3895 – Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry
11. ASTM D4833 – Test Method for Puncture Resistance for Geotextiles, Geomembranes, and Related Products
12. ASTM D5199 – Standard Test Method for Measuring the Nominal Thickness of Geomembranes
13. ASTM D5321 – Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear
14. ASTM D5397 – Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
15. ASTM D5596 – Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
16. ASTM D5641 – Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber
17. ASTM D5820 – Standard Practice for Pressurized Air Channel Evaluation of Dual-Seamed Geomembranes
18. ASTM D5885 – Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry
19. ASTM D5994 – Standard Test Method for Measuring Core Thickness of Textured Geomembrane
20. ASTM D6365 – Standard Practice for Nondestructive Testing of Geomembrane Seams Using the Spark Test
21. ASTM D6392 – Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
22. ASTM D6693 – Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

23. ASTM D7002 –Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Puddle Method
 24. ASTM D7007 – Standard Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earth Materials
- B. Latest version of Geosynthetics Research Institute (GRI) testing methods:
1. GRI-GM13 – Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes
 2. GRI-GM19 – Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes
- C. Construction Quality Assurance (CQA) Plan

1.04 SUBMITTALS

- A. Production Data: Furnish the following in writing to the CQA Engineer a minimum of seven calendar days prior to geomembrane shipment to the site:
1. Resin:
 - a. Statement of production dates and origin of resin used to manufacture the geomembrane for the project.
 - b. Certification stating all resin is from the same manufacturer and that reclaimed polymer added to the resin during the manufacturing of the geomembrane does not exceed 10 percent by weight.
 - c. Copies of the quality control certificates issued by the manufacturer and resin supplier indicating that the resin used to manufacture the geomembrane meets these specifications.
 2. Quality Control: A copy of the manufacturer’s quality control program shall be submitted to the CQA Engineer a minimum of seven calendar days prior to geomembrane shipment to the site. Quality control testing shall be performed by the manufacturer in accordance with the test procedures, and frequency listed in the Quality Control Program and as approved by the CQA Engineer. Prior to delivery the following shall be submitted to the CQA Engineer for Review:
 - a. Certificates for each shift’s production of geomembrane, statements of production dates.
 - b. Certification stating all geomembrane rolls are furnished by one manufacturer, and all rolls are manufactured from one resin type obtained from one resin supplier.

- c. Copies of quality control certificates issued by the Manufacturer. The quality control certificates shall include:
 - 1. Roll numbers and identification
 - 2. Sampling procedures
 - 3. Results of quality control tests, including descriptions of the test methods used
 - d. The results of the manufacturing quality control tests shall meet or exceed the property values listed in Table 02751-1.
 - e. Geomembrane delivery, storage, handling and installation instructions.
3. Extrudate Beads and/or Rod:
- a. Statement of production dates.
 - b. Certification stating all extrudate is from one manufacturer, is the same resin type, and was obtained from the same resin supplier as the resin used to manufacture the geomembrane rolls.
 - c. Copies of quality control certificates issued by the Manufacturer.
- B. Prior to mobilization of the Installer to the site, the Contractor shall submit the following information from Geosynthetic Installer:
- 1. Shop drawings indicating panel layout and field seams 14 calendar days prior to installation of geomembrane.
 - 2. Installation schedule.
 - 3. Copy of Installer's letter of approval or license by the Geomembrane Manufacturer.
 - 4. Installation capabilities, including:
 - a. Information on equipment proposed for this project;
 - b. Average daily production anticipated for this project; and
 - c. Quality control procedures.
 - 5. Copies of the quality control/quality assurance program for the manufacturer of the geomembrane liner.

6. Resume of the superintendent to be assigned to this project, including dates and duration of employment.
 7. Resumes of all personnel who will perform seaming operations on this project, including dates and duration of employment.
 8. The installation crew shall have the following experience.
 - a. The superintendent shall have supervised the installation of a minimum of 2,000,000 sf of polyethylene geomembrane and 500,000 sf of geotextile.
 - b. The master seamer shall have experience seaming a minimum of 1,000,000 sf of polyethylene geomembrane using the same type of seaming apparatus to be used at this site.
 - c. All other seaming personnel shall have seamed at least 100,000 sf of polyethylene geomembrane using the same type of seaming apparatus to be used at this site. Personnel who have seamed less than 100,000 sf of polyethylene geomembrane shall be allowed to seam only under the direct supervision of the master seamer or Superintendent.
- C. During the installation, the Installer shall be responsible for the timely submission to the CQA Engineer of subgrade acceptance certificates, signed by the Installer, for each area to be covered by geomembrane.
- D. The Contractor shall furnish the Owner upon completion of the project:
1. A 20-year written warranty provided by the manufacturer against defects in material. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.
 2. A 1-year warranty provided by the Geosynthetics Installer against defects in workmanship. Warranty conditions concerning limits of liability will be evaluated and must be acceptable to the Owner.
 3. As-built Geomembrane Panel Drawings. As-built shall include panel locations, panel identification numbers, geomembrane roll numbers for each panel, seam caps, destructive sample locations, and large repairs.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with the Installer's Quality Control Program and the Construction Quality Assurance Plan.
- B. Attend a pre-installation conference one week prior to commencing work of this section. Require attendance of parties directly affecting the work of this Section.

PART 2: PRODUCTS

2.01 DELIVERY, STORAGE AND HANDLING

- A. Conform to the manufacturer's requirements to prevent damage to geomembrane.
- B. Delivery:
 - 1. Deliver materials to the site only after the CQA Engineer and the Owner approve required submittals.
 - 2. All rolls of geomembrane delivered to the site shall be identified at the factory with the following:
 - a. Manufacturer's name
 - b. Product identification
 - c. Lot number
 - d. Roll number
 - e. Roll dimensions
 - 3. Separate damaged rolls from undamaged rolls and store at locations designated by the Owner until proper disposition of material is determined by the Owner and the CQA Engineer.
 - 4. The Owner will be the final authority regarding damage.
 - 5. Separate rolls without proper documentation and store until the CQA Engineer approval is received.
 - 6. The contractor shall be responsible for offloading all of the geosynthetics.
- C. On-Site Storage:
 - 1. Store in space allocated by the Owner.
 - 2. Protect from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or other damage.
 - 3. Store on level prepared surface (not on wooden pallets).
 - 4. Stack per Manufacturer's recommendation but no more than three rolls high.
- D. On-Site Handling:
 - 1. 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. Dragging panels on ground surface will not be permitted.

2. Do not fold geomembrane material; folded material shall be rejected.
 3. The installer is responsible for storage, and transporting material from storage area to liner facility.
- E. Damaged Geomembrane:
1. Geomembrane damage will be documented by the CQA Engineer.
 2. Damaged geomembrane shall be repaired, if possible, in accordance with these specifications or shall be replaced at no additional cost to the Owner.

2.02 MATERIALS

- A. The geomembrane shall be comprised of high-density polyethylene (HDPE) material as indicated on the Drawings, manufactured of new, first-quality products designed and manufactured specifically for the purpose of liquid containment in hydraulic structures.
- B. The geomembrane shall be produced free of holes, blisters, undispersed raw materials, or any sign of contamination by foreign matter. Any such defect shall be repaired in accordance with the repair procedures in Article 3.06.
- C. The geomembrane shall be manufactured with a minimum of 15.0 feet seamless width. There shall be no factory seams.
- D. The primary geomembrane liner shall be HDPE 60-mil and textured as indicated on the Drawings. The secondary liner shall be either HDPE 40-mil geomembrane or HDPE 50-mil MicroDrain material.
- E. The geomembrane shall be supplied in rolls; folds will not be permitted. Identify each roll with labels indicating lot number, roll number, thickness, length, width, manufacturer, and plant location.
- F. Specifications for HDPE geomembrane properties are presented in Table 02751-1 included at the end of this section. Supplied material shall conform to these properties based upon the manufacturer's QC testing and CQA conformance testing.
- G. Resin:
1. Shall be HDPE, new, first quality, compounded and manufactured specifically for producing HDPE geomembrane.
 2. Do not intermix resin types.
- H. Extrudate Rod or Bead:

1. Shall be made from same resin as the geomembrane.
 2. Additives shall be thoroughly dispersed.
 3. Shall be free of contamination by moisture or foreign matter.
- I. The textured geomembrane shall exhibit minimum shear strength characteristics along the textured geomembrane/low-permeability soil liner interface, textured geomembrane/geocomposite drainage layer interface, and soil/geotextile/Microdrain/soil interfaces. These characteristics shall be demonstrated with direct shear testing (ASTM D5321) by an independent CQA laboratory.
1. The minimum residual shear strength shall correspond to an internal friction angle of 10 degrees with no cohesion as determined by the following test conditions:
 - a. Perform direct shear test (ASTM D5321) at normal stresses of 2,000, 4,000, 6,000 and 10,000 psf.
 - b. For the clay interface, compact clay to 92 percent relative compaction at moisture content of 1 to 4 percent above optimum.
 - c. For the clay interface, allow compacted clay to consolidate under each load.
 - d. Use a shearing rate of 0.04 in./min for the geomembrane/low-permeability soil liner interface. Use a 0.2 in./min. for the geomembrane/geocomposite and the MicroDrain/geotextile interface.
 2. The texturing shall remain intact under the above test conditions (no peeling or shearing of the texturing).
- J. The primary geomembrane shall have a white-reflective surface with the white surface facing upward. The secondary geomembrane may consist of normal, black-surfaced HDPE or the white-surfaced HDPE geomembrane or drainage liner.

2.03 ACCEPTABLE MANUFACTURERS

- A. The primary geomembrane shall consist of 60HD Ssmicro W/B. The secondary geomembrane shall consist of 40HD micro or the approved alternative drainage liner specified in section 2.03C. The following products are prequalified for the work specified herein:

60 mil HDPE Single Sided Textured White/Black Microspike Liner

40 mil HDPE Double Sided Textured Black Microspike Liner

Manufactured by:

Agru America Inc.
Georgetown, SC 29440

- B. The above products are prequalified based on information provided by the geomembrane Manufacturer. The Contractor is responsible for confirming with the Manufacturer that the product will meet the requirements of Part 2.02 of this Section. Products are approved for use based on conformance testing conducted by the Owner.
- C. The following product is an approved alternative to the secondary geomembrane under the conditions described in Section 2.03C.1:

50 mil HDPE MicroDrain Liner

Manufactured by:

Agru America Inc.
Georgetown, SC 29440

- 1. If MicroDrain is used as the secondary liner, the overlying geocomposite shall be replaced by an 8 oz/sy geotextile filter layer that meets the requirements of Technical Specification 02752. Prior to installation, the soil/geotextile, geotextile/MicroDrain, and Microdrain/soil interfaces shall be tested for shear strength and shall meet the requirements of Section 2.02I. The three interfaces may be tested individually or combined in a multilayered box test. The soil/geotextile/MicroDrain LDS and secondary liner system shall also be tested for transmissivity which must meet the transmissivity requirements listed in Technical Specification 2755 for geocomposite.

2.04 EQUIPMENT

- A. Welding equipment and accessories shall meet the following requirements:
 - 1. Equipped with gauges showing temperatures both in apparatus and at nozzle (extrusion welder) or at wedge (fusion welder).
 - 2. Maintain adequate number of welding apparatus to avoid delaying work.
 - 3. Use power source capable of providing constant voltage under combined-line load.
 - 4. Provide secondary containment to catch spilled fuel under electric generator, if located on geomembrane.
- B. Provide calibrated tensiometer capable of quantitatively measuring geomembrane strength:

1. Equipped with gauge accurate to +2 lbs per inch of geomembrane width and capable of pulling at 2 inches per minute and 20 inches per minute.
 2. Provide one-inch die for cutting sample specimens.
 3. Provide certificate of tensiometer calibration within the past 12 months.
- C. Provide calibrated pressure and vacuum gauges capable of quantitatively measuring air pressure.
1. Equipped with gauge accurate to 1 lbs per square inch.
 2. Provide certificate of calibration with the past 12 months.

2.05 CONFORMANCE TESTING

- A. Material that arrives at the site will be sampled and conformance tested by the CQA Engineer at a minimum frequency of one per 150,000 square feet of material supplied to the project, with a minimum of one sample per production lot. Contractor shall pay for shipping the conformance samples to the geosynthetic CQA laboratory specified by the CQA engineer. Materials may be sampled at the plant at the discretion of the owner. Materials may be sampled at the plant at the option of the owner as follows:
1. Geomembrane manufacturer shall sample the geomembrane as directed by the CQA Engineer.
 2. Contractor or Geomembrane manufacturer shall be responsible for all costs to sample and ship the samples to the CQA Engineer's CQA laboratory for testing.
- B. As a minimum, the following tests will be performed by a geosynthetics CQA laboratory and shall meet the requirements outlined in Table 02751-1.
1. Thickness (ASTM D5994)
 2. Specific Gravity (ASTM D1505)
 3. Carbon Black Content (ASTM D1603)
 4. Carbon Black Dispersion (ASTM D5596)
 5. Tensile Properties (ASTM D638)
 6. Puncture Resistance (ASTM D4833)
- C. If the geotextile/Microdrain alternative is used for the LDS system and secondary liner, perform Transmissivity testing (ASTM D4716) on a soil/geotextile/Microdrain test envelope. The test results shall meet the transmissivity requirements listed in Technical Specification 02755 for

Geocomposites.

- D. If a test result is in non-conformance with the specifications, all material from that production lot represented by the failed test shall be rejected. Rejected material may be minimized by bounding the nonconformance material with additional passing tests conducted by the geosynthetics CQA laboratory. Additional tests shall be conducted at no additional cost to the Owner. The Contractor or Manufacturer shall pay for all additional tests.
- E. Rejected material shall be replaced at no additional cost to Owner. The Contractor or Manufacturer shall pay for all replaced material.
- F. A minimum of one large-scale direct shear test shall be performed (ASTM D5321) to verify the material requirements in Paragraph 2.02.I for each interface identified. Additional tests shall be performed at the discretion of the CQA Engineer and/or if the geomembrane texturing appears to vary.

PART 3: EXECUTION

3.01 EXAMINATION

- A. Verify in writing that the surface on which the geomembrane will be installed is acceptable. In so doing the Installer shall assume full liability for the accepted surface.
- B. The beginning of installation means acceptance of existing conditions. The Installer shall be responsible for maintenance of the geomembrane covered subgrade once installation of geomembrane begins.

3.02 PREPARATION

- A. Maintain the surface suitability and integrity until the lining installation is completed and accepted.
- B. Repair rough areas and any damage to the subgrade caused by installation of the liner.
- C. To avoid sharp bends in the geomembrane, bevel the leading edges of the anchor trench.
- D. Subgrade shall be smooth, uniform, firm and free from rocks or other debris. For deployment over soil subgrade, no rocks or protrusions greater than 1/2-inch in diameter shall be exposed at the subgrade surface.

3.03 DEPLOYMENT

- A. Geomembrane shall not be deployed:
 - 1. During precipitation;

2. In the presence of excessive moisture;
 3. In areas of ponded water;
 4. In the presence of excessive winds; or
 5. In excessive heat or cold.
- B. Each panel shall be marked with an "identification code" (number or letter) consistent with the layout plan. The identification code shall be simple and logical. The number of panels deployed in one day shall be limited by the number of panels which can be seamed on the same day. All deployed panels shall be seamed to adjacent panels by the end of each day.
- C. The following is the acceptable method of deployment:
1. Use equipment which will not damage geomembrane by handling, trafficking, leakage of hydrocarbons or other means.
 2. Do not allow personnel working on geomembrane to wear damaging shoes, or engage in activities that could damage geomembrane.
 3. Smoking on the liner is prohibited.
 4. Round sharp corners of clamps and other metal tools used in the work area.
 5. Do not allow clamps and other metal tools to be tossed or thrown.
 6. Unroll panels with a method that protects geomembrane from scratches and crimps and protects soil surface and underlying geotextile from damage.
 7. Use a method to minimize wrinkles, especially differential wrinkles between adjacent panels.
 8. Place adequate hold-downs to prevent uplift by wind.
 9. Use hold-downs that will not damage geomembrane such as sandbags.
 10. Use continuous hold-downs along leading edges to minimize risk of wind flow under panels.
 11. Panels shall be deployed perpendicular to slope elevation contours and the generation of seams shall be minimized.
 12. Protect geomembrane in heavy traffic areas by geotextile, extra geomembrane or other suitable materials.
 13. Do not allow vehicular traffic on geomembrane surface.

14. Panels deployed on grades steeper than 12% shall extend a minimum of 5 feet beyond the crest or toe of that grade.
- D. Visually inspect sheet surface during unrolling of geomembrane and mark faulty or suspect areas for repair or test. Replace faulty (requires more than one patch per 200 square feet) geomembrane stock at no additional cost to the Owner.
- E. Deploy geomembrane in ambient temperatures less than 104° F (40° C) and greater than 32° F (0° C), measured 6 inches above geomembrane surface. In prevailing warm or cold weather conditions deployment may be acceptable if the provisions for sampling in such conditions is satisfied (see Section 3.05 below). The geomembrane shall not be deployed during precipitation, in the presence of excessive moisture, in area of ponded water, or in the presence of excessive winds.

3.04 FIELD SEAMING

- A. Orient seams perpendicular to slope elevation contours, i.e., orient down (not across) slope and use seam numbering system compatible with panel number system.
- B. Minimize the number of field seams in corners, odd-shaped geometric locations and outside corners.
- C. Overlap panels by a minimum of 3 inches for extrusion welding and 4 inches for fusion welding. Use procedures to temporarily bond adjacent panels together that do not damage the geomembrane and that are not detrimental to seam weld material for extrusion welding.
- D. Do not use solvent or adhesive unless product is approved in writing by the Owner.
- E. No horizontal seams shall be allowed on grades steeper than 12% or within 5 feet of the crest or toe of slopes. A horizontal seam is defined as more than half of the panel width.
- F. Clean surface of grease, moisture, dust, dirt, debris or other foreign material.
- G. Prior to any extrusion welding, the geomembrane seam or repair shall be prepared as follows:
1. Clean surface of oxidation by disc grinder or equivalent not more than one hour before seaming; use number 80 grit sandpaper for the disc grinder. Bevel edges of geomembrane before bonding and provide continuous tacking in repair areas.
 2. If MicroDrain Liner is installed, drainage stubs along butt seams and repairs shall be grinded away prior to welding.

3. Repair area where excessive grinding substantially reduces sheet thickness by more than 4 mils beyond extents of weld.
 4. Clean grinding dust around weld area after grinding.
 5. The following procedure shall be followed for wrinkles and fishmouths.
 - a. Cut along the ridge of the wrinkle or fishmouth.
 - b. Overlap a minimum of 3 inches and seam.
 - c. Any portion where the overlap is less than 3 inches shall be patched with an oval or round patch of geomembrane that extends a minimum of 6 inches beyond the cut in all directions.
 6. If required, a firm, dry substrate (piece of geomembrane or other material) may be placed directly under the seam overlap to achieve proper support.
 7. Keep water from intercepting the weld during and immediately after welding the seam.
 8. For existing welds, or welds that are over 3 minutes old, grind the existing weld two inches back from point of termination and restart welding on ground weld.
- H. At least one spare operable seaming apparatus shall be maintained for every three seaming teams. Place protective fabric or piece of geomembrane beneath hot welding apparatus when resting on geomembrane lining and use an electric generator capable of providing constant voltage under combined line load. The electric generator shall generally be located outside of liner. Provide protective lining and secondary containment large enough to catch spilled fuel under electric generators when located on the liner. The welding apparatus shall be equipped with gauges giving temperatures in apparatus and at nozzle.
- I. For extrusion welding, purge welding apparatus of heat-degraded extrudate before welding if extruder is stopped for longer than five minutes. All purged extrudate shall be disposed of off the geomembrane. Each extruder shoe shall be inspected daily for wear to assure that its offset is the same as the geomembrane thickness. Repair or replace worn shoes, damaged or misaligned armature brushes, nozzle contamination, or other worn or damaged parts. Avoid stop-start welding. Remove extrudate rod from welder when not using welder for long period (over two hours). No welding may commence on the liner until the field trial seam sample, made by that equipment and seamer, passes destructive testing.
- J. Test and set "hot air system" using scrap material at least each day prior to commencing seaming and adjust hot air velocity to preclude wind effects. Adjust contact pressure rollers to prevent surface ripples in sheet. No equipment shall be used for welding the geomembrane until a field trial seam sample made by that equipment has passed destructive testing.

- K. In performing hot wedge welding, the welding apparatus shall be automated vehicular mounted devices equipped with gauges giving applicable temperatures and pressures. The edge of cross seams shall be ground to smooth incline (top and bottom) prior to welding. A smooth insulating plate or fabric shall be placed beneath the hot welding apparatus after usage. Protect against moisture buildup between sheets. If welding across cross seams, conduct field test seams at least every two hours, otherwise once prior to start of work and once at mid-day. No equipment is allowed to commence welding on geomembrane until the field trial seam sample made by that equipment has passed destructive testing.
- L. Field trial seams shall be conducted, per seaming apparatus and per seamer, on pieces of geomembrane liner to verify adequate seaming conditions at the following frequency:
1. At beginning of each seaming period.
 2. At least once every five hours.
 3. At the discretion of the CQA Engineer.
- M. Make the trial seams at area of seaming and in contact with subgrade (same condition as the liner to be seamed). The seam sample shall be at least 42 inches long and 12 inches wide with the seam centered lengthwise. A one-foot length of each trial seam sample shall be submitted to the CQA Engineer for archive. Cut ten 1-inch wide specimens and test five for peel adhesion, and five for bonded seam strength (shear). Each double wedge fusion seam specimens shall be tested for peel on both sides of the weld. A specimen passes when:
1. The locus-of-break is not one of the following failing modes as defined by ASTM D6392:
 - a. An adhesion failure (code AD, AD1 or AD2),
 - b. Greater than 25% adhesion failure on an adhesion-break (code AD-BRK), or
 - c. An adhesion-weld break through an extrusion weld which exhibits a strength less than required by Table 02751-2
 2. The break is ductile.
 3. The strength of breaks for the trial seam testing shall conform to the values listed in Table 02751-2, included at the end of this section.
- N. A trial seam sample passes when all 5 of 5 specimens have passing results in peel and shear tests. If a specimen fails (one of the specimens fails in either peel or shear mode), the trial seam procedure shall be repeated in its entirety. If the repeated trial seam fails, the seaming apparatus or operator may not weld until the deficiencies or conditions are corrected and two consecutive passing field trial seams are achieved.

- O. The following procedures shall be followed during cold weather conditions.
1. Geomembrane surface temperatures shall be determined by the CQA Engineer at intervals of at least once per 100 feet of seam length to determine if preheating is required. For extrusion welding, preheating is required if the surface temperature of the geomembrane is below 32°F (0°C).
 2. For fusion welding, preheating may be waived by the Owner based upon a recommendation by the CQA Engineer, if the installer demonstrates to the CQA Engineer's satisfaction that welds of equivalent quality may be obtained without preheating at the expected temperature of installation.
 3. If preheating is required, the CQA Engineer will observe all areas of geomembrane that have been preheated by a hot air device prior to seaming, to ensure that they have not been overheated.
 4. Care shall be taken to confirm that the surface temperatures are not lowered below the minimum surface temperatures specified for welding due to winds or other adverse conditions. It may be necessary to provide wind protection for the seam area.
 5. All preheating devices shall receive approval by the CQA Engineer prior to use.
 6. Additional destructive tests will be taken at an interval between 250 and 500 feet of seam length, at the discretion of the CQA Engineer.
 7. Sheet grinding may be performed before preheating, if applicable.
 8. Trial seaming shall be conducted under the same ambient temperature and preheating conditions as the production seams. Under cold weather conditions, new trial seams shall be conducted if the ambient temperature drops by more than 10°F from the initial trial seam test conditions. Such new trial seams shall be conducted upon completion of seams in progress during the temperature drop.
- P. The following procedures shall be followed during warm weather conditions.
1. At ambient temperatures above 104°F (40°C), no seaming of the geomembrane shall be permitted unless the Installer can demonstrate to the satisfaction of the CQA Engineer that the geomembrane seam quality is not compromised. Trial seaming shall be conducted under the same ambient temperature conditions as the production seams. At the option of the CQA Engineer, additional destructive testing may be required for any suspected areas.

3.05 FIELD QUALITY CONTROL

- A. The Installer shall designate a full-time quality control (QC) technician who shall

be responsible for supervising and/or conducting the field quality control program. The QC technician may not be replaced without written authorization by the Owner.

B. Non-Destructive Seam Testing

1. The Installer shall non-destructively test field welds for continuity over their full length using vacuum test units. The non-destructive testing shall be performed concurrently with seaming work progress, not at the completion of all seaming. Any defects located in the seam shall be repaired in accordance with Section 3.06. The following non-destructive testing procedures shall be used to test the field seams for continuity:
 - a. Vacuum box testing per ASTM D5641 for extrusion welds.
 - b. Air pressure testing per ASTM D5820 for double fusion seams.
2. Vacuum Box Testing
 - a. The vacuum box testing equipment shall comprise the following.
 1. Rigid housing; transparent viewing window; a soft rubber gasket attached to bottom of housing; porthole or valve assembly; and a vacuum gauge.
 2. A vacuum pump capable of applying 5 psi gage pressure of vacuum to the box.
 3. A bucket of soapy solution and applicator.
 - b. The procedure for vacuum testing is as follows:
 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 approximately 12 inches by 30 inches (or 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. Examine length of weld through viewing window for presence of soap bubbles for a period of not less than 10 seconds.

8. If no bubbles appear after 10 seconds, close vacuum valve and open bleed valve, move box over next adjoining area with minimum three inches overlap and repeat process.
 9. Areas where soap bubbles appear will be marked by the CQA Engineer with a defect code. The Installer shall then repair the area in accordance with Section 3.06 and retest the repaired area.
3. Air Pressure Testing (Double Fusion Seams Only)
- a. The air pressure testing equipment shall comprise the following.
 1. An air pump, equipped with pressure gauge having an accuracy of 1 psi, capable of generating and sustaining a pressure of 30 psi and mounted on a cushion to protect geomembrane.
 2. Rubber hose with fittings and connections.
 3. Sharp hollow needle or other pressure feed device approved by the Owner.
 - b. To perform the test:
 1. Seal both ends of the seam to be tested.
 2. Insert a needle or other approved pressure feed device into tunnel created by double hot wedge seaming and insert a protective cushion between air pump and geomembrane.
 3. Energize air pump to 30 psi, close valve, and observe that pressure is maintained in the pressurized seam for a minimum of five minutes.
 4. If loss of pressure exceeds 2 psi or does not stabilize, locate faulty area and repair in accordance with Section 3.06.
 5. Release pressure at opposite end of seam from gauge to verify that the seam is not blocked.
 6. Remove approved pressure feed device and seal penetration holes by extrusion welding.
4. Spark Testing
- a. Welds that cannot be tested by vacuum box or air pressure test (i.e., pipe boot) shall be spark tested per ASTM D6365.
 - b. The spark testing equipment shall comprise the following.
 1. 24-gauge copper wire.

2. Low-amperage electric detector, 20,000 to 30,000 volt, with brush-type electrode capable of causing visible arc up to $\frac{3}{4}$ inch from copper wire.
- c. To perform the test:
 1. Place copper wire within 1/4 inch of the edge of extrusion seam or clamp seal.
 2. Pass electrode over seam or clamp area and observe for spark. If a spark is detected perform a repair.

C. Destructive Seam Testing

1. For destructive seam testing, the CQA Engineer shall be provided with a minimum of one sample per 500 feet of seam length by each welding apparatus. The location will be selected by the CQA Engineer and the installer will not be informed of the sample location in advance. The installer shall visually observe, mark and repair suspect welds before release of a section to the CQA Engineer for destructive sample marking. Cut destructive samples as seaming and nondestructive testing progresses, prior to completion of liner installation. The CQA Engineer will mark destructive samples with consecutive numbering, location, apparatus I.D., technician I.D., Engineer I.D., and apparatus settings and date. Record, in written form, weld and test date, time, location, seam number, ambient temperatures, machine settings, technician I.D., apparatus I.D., and pass or fail description. The installer shall immediately repair holes in geomembrane resulting from obtaining destructive samples and vacuum test patches. The size of destructive samples shall be 12 inches wide by 48 inches long with seam centered lengthwise.
2. Two 1-inch wide specimens shall be taken from each side of the sample and tested by the Installer for peel and shear in the field prior to CQA destructive testing. If any of these specimens fail, the Installer shall track the failure immediately. The remaining sample shall be cut into three 14-inch long pieces and distributed as follows:
 - a. To the CQA Engineer for destructive testing.
 - b. To the CQA Engineer for archive.
 - c. To the Installer for its use.
3. Ten 1-inch wide specimens shall be taken from one piece. Five specimens shall be tested for peel and five for shear strengths in accordance with the CQA Plan, with test results meeting the requirements of Table 02751-2, included at the end of this section. In the event of failure, the procedures for failed seam tracking are:

- a. Retrace welding path a minimum of 10 feet in both directions from the failed test location and remove (at these locations) a one-inch wide specimen for testing. Repeat tracking procedures until the Installer is confident of seam quality.
 - b. Obtain destructive samples from each side of the welding path and give samples to the CQA Engineer for destructive testing.
 - c. Repeat process if additional tests fail.
 - d. Reconstruct seam between passing test locations to satisfaction of the CQA Engineer.
 - e. Reconstruction may be one of the following:
 - 1. Cut out old seam, reposition panel and re-seam.
 - 2. Add cap strip.
 - f. Cut additional destructive samples from reconstruction at discretion of CQA Engineer.
 - g. If additional destructive sample results are not acceptable, repeat process until reconstructed seam is judged satisfactory by the CQA Engineer.
- D. For final seaming inspection, check the seams and surface of geomembrane for defects, holes, blisters, undispersed raw materials, or signs of contamination by foreign matter. Brush, blow, or wash geomembrane surface if dirt inhibits inspection. The CQA Engineer shall decide if cleaning of geomembrane surface and welds is needed to facilitate inspection. Distinctively mark repair areas and indicate required type of repair.

3.06 REPAIR PROCEDURES

- A. The geomembrane will be inspected before and after seaming for evidence of defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter. The surface of the geomembrane shall be clean at the time of inspection. The geomembrane surface shall be swept or washed by the Installer if surface contamination inhibits inspection. The Installer shall ensure that an inspection of the geomembrane precedes any seaming of that section.
- B. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.
- C. Repair, removal and replacement shall be at the Subcontractor's expense if the damage results from the installer's, or the Subcontractor's sub-subcontractor activities.
- D. Repair any portion of the geomembrane exhibiting a flaw, or failing a destructive

or non-destructive test. The Installer shall be responsible for repair of damaged or defective areas. Agreement upon the appropriate repair method shall be decided between the CQA Engineer and the Installer. Procedures available include:

1. Patching: Used to repair holes (over 1/4-inch diameter), tears (over 1/4-inch long), undispersed raw materials, and contamination by foreign matter.
2. Grinding and welding: Used to repair pinholes, blemishes and over-grinding.
3. Capping: Used to repair large lengths of failed seams.
4. Removing the seam and replacing with a strip of new material.

E. In addition, the following procedures shall be observed.

1. Geomembrane surfaces to be repaired shall be abraded (extrusion welds only) no more than 1/2 hour prior to the repair.
2. All geomembrane surfaces shall be clean and dry at the time of repair.
3. The repair procedures, materials, and techniques shall be approved in advance of the specific repair by the CQA Engineer.
4. Extend patches or caps at least 6 inches beyond the edge of the defect, i.e., be a minimum of 12 inches in diameter, and round all corners of material to be patched.
5. Bevel the edge of the patch and do not cut patch with repair sheet in contact with geomembrane. Temporarily bond the patch to the geomembrane with an approved method, extrusion weld the patch and then vacuum test the repair.

F. Repair Verification:

1. Number and log each patch repair (performed by the CQA Engineer).
2. Non-destructively test each repair using methods specified in this Section.
3. Provide daily documentation of non-destructive and destructive testing to the CQA Engineer. The documentation shall identify seams that initially failed the test and include the evidence that these seams were repaired and retested successfully.

3.07 PREPARATION FOR ELECTRICAL LEAK LOCATION SURVEY

- A. Preparation for the Owner provided Electrical Leak Location Survey (ELLS) consists of all work necessary to prepare the liner system for an ELLS per ASTM D7007 (Dipole Method). Preparations for the ELLS shall be completed as

follows:

1. The Contractor shall provide a water truck and driver to add water to the gravel and the operations soil during construction and prior to the ELLS to maintain moisture in these layers. This water application shall be at the direction of the Project Manager or CQA Consultant.
 2. In areas designated for processed wood operations layer, perform the ELLS on top of the LCRS gravel. In areas designated for soil operations layer, perform the ELLS on top of the soil operations layer. It is anticipated that the Contractor will leave a small strip of operations layer uncompleted at the edges and tie-in areas to provide electrical isolation of the liner system. Completion of the operations layer soil placement will follow successful completion of the ELLS.
 3. The ELLS firm shall furnish and the Installer shall install permanent electrodes within the low-permeability soil layer prior to the installation of the primary geomembrane. The end(s) of the wires leading to the electrodes shall be made accessible to the ELLS Surveyor at the time of the ELLS.
 4. The Contractor shall prepare the liner for the ELLS by ensuring that a minimum of 6 inches and maximum of 3 feet of the 60-mil HDPE geomembrane is continuously exposed around the perimeter of the landfill including removal of a portion of any access ramps to the operations layer.
 5. The Contractor shall supply an AC power source for the ELLS (110V, 5A).
 6. The Contractor shall supply two supervised laborers with equipment to assist with laying out the survey string lines and wetting the survey area if the surface of the gravel or operations layer is dry.
 7. The ELLS is expected to take up to 3 working days to complete. The Contractor shall allow for time necessary to complete the survey.
- B. If the ELLS identifies potential damages and/or leaks in the liner, the Contractor is responsible for all work and costs necessary to expose the liner, repair the damages or leaks in the liner, and reconstruct the necessary layers of the liner system.
- C. Construction of the remaining portion of the liner system can commence after successful completion of the ELLS and once the repair of all damaged liner and/or leaks are completed to the satisfaction of the CQA Engineer.

3.08 ACCEPTANCE

- A. The Subcontractor shall retain ownership and responsibility for the geomembrane until acceptance by the Owner.

- B. Acceptance Criteria: The following shall be completed:
1. Verification of adequacy of field seams, repairs and testing by the CQA Engineer.
 2. Electrical Leak Location Survey (ELLS) in accordance with Section 3.07 and the CQA Plan.
 3. All submittals.
 4. “As-built” drawings, approved and final drawings submitted.
 5. Construction area cleaned.
 6. Final field inspection
 7. Warranty signed over to the Owner.
- C. Field Inspections: Inspect the completed work with the Owner; defects, wrinkles, suspicious looking welds shall be noted and marked; document, correct and arrange further field inspections until no corrective action is necessary.

END OF SECTION

TABLE 02751-1**HDPE GEOMEMBRANE PROPERTIES****Secondary Liner**

| Property | Qualifier | Units | Specification | Specification | Test Method |
|--------------------------|--------------|---------|--------------------|--------------------------------------|---------------------------|
| | | | 40-mil Geomembrane | 50-mil MicroDrain Alternative Design | |
| Thickness | min. average | mils | 40 | 50 | ASTM D5994 ⁽¹⁾ |
| | minimum | mils | 36 | 42.5 | |
| Density | min. avg. | g/cc | 0.940 | 0.94 | ASTM D792/D1505 |
| Carbon Black Content | range | % | 2 - 3 | 2-3 | ASTM D1603 |
| Carbon Black Dispersion | rating | - | Category 1,2,&3 | Category 1&2 | ASTM D5596 ⁽²⁾ |
| Tensile Properties | | | | | ASTM D6693 ⁽³⁾ |
| 1. Yield Strength | min. avg. | lb/in | 84 | 105 | |
| 2. Break Strength | min. avg. | lb/in | 60 | 75 | |
| 3. Elongation at Yield | min. avg. | % | 12 | 12 | |
| 4. Elongation at Break | min. avg. | % | 100 | 100 | |
| Tear Resistance | min. avg. | lb | 28 | 35 | ASTM D1004 ⁽⁴⁾ |
| Puncture Resistance | min. avg. | lb | 60 | 75 | ASTM D4833 |
| Oxidation Induction Time | | | | | |
| 1. Standard, or | min. avg. | minutes | 100 | 100 | ASTM D3895 |
| 2. High Pressure | min. avg. | minutes | 400 | 400 | ASTM D5885 |
| Stress Crack Resistance | min. avg. | hours | 500 | 500 | ASTM D5397 ⁽⁵⁾ |

10 measurements across the width of the roll (perpendicular to the machine direction) and report average and lowest individual readings.

2. At least 9 specimens will be Category 1 or 2. No more than one specimen shall be Category 3. No specimen shall be Category 4 or 5.
3. Type IV die. ASTM D638 test specimen shall be used.
 - a) 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.
 - b) Machine Direction (MD) and Transverse Direction (TD) average values should be on the basis of 5 test specimens in each direction.
 - c) Yield elongation is based on a gauge length of 1.3 inches. Break elongation is based on a gauge length of 2.0 inches.
4. Die C
5.
 - a) P-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials.
 - b) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

TABLE 02751-1 (Continued)

HDPE GEOMEMBRANE PROPERTIES

60-mil

| Property | Qualifier | Units | Specification | Test Method |
|--------------------------|--------------|---------|-----------------|---------------------------|
| Thickness | min. average | mils | 60 | ASTM D5994 ⁽¹⁾ |
| | minimum | mils | 54 | |
| Density | min. avg. | g/cc | 0.940 | ASTM D792/D1505 |
| Carbon Black Content | range | % | 2 - 3 | ASTM D1603 |
| Carbon Black Dispersion | rating | - | Category 1,2,&3 | ASTM D5596 ⁽²⁾ |
| Tensile Properties | | | | ASTM D6693 ⁽³⁾ |
| 1. Yield Strength | min. avg. | lb/in | 126 | |
| 2. Break Strength | min. avg. | lb/in | 90 | |
| 3. Elongation at Yield | min. avg. | % | 12 | |
| 4. Elongation at Break | min. avg. | % | 100 | |
| Tear Resistance | min. avg. | lb | 42 | ASTM D1004 ⁽⁴⁾ |
| Puncture Resistance | min. avg. | lb | 90 | ASTM D4833 |
| Oxidation Induction Time | | | | |
| 1. Standard, or | min. avg. | minutes | 100 | ASTM D3895 |
| 2. High Pressure | min. avg. | minutes | 400 | ASTM D5885 |
| Stress Crack Resistance | min. avg. | hours | 300 | ASTM D5397 ⁽⁵⁾ |

1. 10 measurements across the width of the roll (perpendicular to the machine direction) and report average and lowest individual readings.
2. At least 9 specimens will be Category 1 or 2. No more than one specimen shall be Category 3. No specimen shall be Category 4 or 5.
3. Type IV die. ASTM D638 test specimen shall be used.
 - a) 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.
 - b) Machine Direction (MD) and Transverse Direction (TD) average values should be on the basis of 5 test specimens in each direction.
 - c) Yield elongation is based on a gauge length of 1.3 inches. Break elongation is based on a gauge length of 2.0 inches.
4. Die C
5.
 - a) P-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials.
 - b) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

TABLE 02751-2**HDPE GEOMEMBRANE SEAM PROPERTIES****Secondary Liner**

| PROPERTY | QUALIFIER | UNITS | SPECIFICATION | | METHOD |
|---|-----------|--------|--------------------|--------------------------------------|----------------------|
| | | | 40-mil Geomembrane | 50-mil MicroDrain Alternative Design | |
| Shear Seam Strength ^{1,2} | minimum | lb/in. | 80 | 100 | D6392 ⁽¹⁾ |
| Shear Seam Elongation ³ | minimum | % | 50 | 50 | D6392 ⁽²⁾ |
| Peel Adhesion ^{1,2} Fusion Strength | minimum | lb/in. | 60 | 76 | D6392 ⁽¹⁾ |
| Extrusion Strength | minimum | lb/in. | 52 | 65 | D6392 ⁽¹⁾ |
| Peel Separation | maximum | % | 25 | 25 | D6392 ⁽¹⁾ |

60-mil

| PROPERTY | QUALIFIER | UNITS | SPECIFICATION | METHOD |
|---|-----------|--------|---------------|---------------------------|
| Shear Seam Strength ^{1,2} | minimum | lb/in. | 120 | ASTM D6392 ⁽¹⁾ |
| Shear Seam Elongation ³ | minimum | % | 50 | ASTM D6392 ⁽²⁾ |
| Peel Adhesion ^{1,2} Fusion Strength | minimum | lb/in. | 91 | ASTM D6392 ⁽¹⁾ |
| Extrusion Strength | minimum | lb/in. | 78 | ASTM D6392 ⁽¹⁾ |
| Peel Separation | maximum | % | 25 | ASTM D6392 ⁽¹⁾ |

1. For shear tests, the sheet shall yield before failure of the seam. For either test, testing shall be discontinued when the sample has visually yielded. Sample break shall conform to a passing locus-of-break as described in paragraph 3.04.M.1 of this Section.
2. Elongation measurements shall be omitted for field testing.

SECTION 02752

GEOTEXTILES

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the general requirements for the manufacture, supply, installation, and quality control (QC) of geotextiles associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02223 – Gravel and Sand
- B. Section 02225 - Operations Layer
- C. Section 02751 - HDPE Geomembranes
- D. Section 02755 - Geocomposites

1.03 REFERENCES

- A. Latest version of the American Society for Testing and Materials (ASTM) standards:
 - 1. ASTM D3786 - Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method
 - 2. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity
 - 3. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles
 - 4. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 5. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile
 - 6. ASTM D5199 - Standard Test Method for Measuring the Nominal Thickness of Geosynthetics
 - 7. ASTM D5261 - Standard Test Method for Measuring Mass Per Unit Area of Geotextiles

8. ASTM D6241 – Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

1.04 SUBMITTALS

- A. Quality Control Submittals:
 1. A copy of the Manufacturer's quality control (QC) plan.
 2. Manufacturing QC certificates for each production run. The certificates shall identify the origin and the manufacturer of the resin. The certificates shall be signed by responsible parties employed by the manufacturer (such as the production manager). Tests shall be performed at the frequency indicated in the Manufacturer's QC Plan.
 3. The QC certificates shall include roll numbers and identification, sampling procedures, and results of quality control tests verifying that each of the properties listed in Table 02752-1 are met. The Manufacturer quality control tests to be performed include the tests specified in Article 2.1 of this section.
 4. Manufacturer's certification that the geotextile products meet or exceed specified requirements and are 100% free of needles.
- B. The Installer shall submit the following.
 1. Installation plan
 2. Proposed seam stitching methods

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with the Construction Quality Assurance (CQA) plan.

1.06 QUALIFICATIONS

- A. Geotextile shall be supplied by a Geotextile Manufacturer meeting the following qualification requirements:
 1. The Geotextile Manufacturer shall be responsible for the production and delivery of geotextile rolls and shall be a well-established firm with more than two years experience in the manufacture of geotextiles. The Geotextile Manufacturer shall submit a statement to the CQA Engineer listing:

- a. Certified minimum average roll property values of the proposed geotextiles and the test methods used to determine those properties.
- b. Projected delivery date of the material for this project.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Geotextile Filter: Geotextiles shall have the following minimum properties:

Table 02752-1

| Fabric Property | ASTM Test Method | Qualifier | Units | Minimum Values |
|---------------------------|------------------|-----------|-----------------|----------------|
| Mass Per Unit Area | D5261 | Min. Avg. | oz/sy | 8 |
| Trapezoidal Tear Strength | D4533 | Min. Avg. | lbs | 75 |
| Grab Strength | D4632 | Min. Avg. | lbs | 200 |
| CBR Puncture Strength | D6241 | Min. Avg. | lbs | 535 |
| Permittivity | D4491 | Min. Avg. | s ⁻¹ | 0.60 |
| AOS (maximum value) | D4751 | Max. | mm | 0.21 |
| AOS (average value) | D4751 | Avg. | mm | 0.18 |

- B. All geotextiles shall be a non-woven, triple-punched, needle-punched polyester or polypropylene fabric free from needles or other foreign material.

2.02 ACCEPTABLE MANUFACTURERS

- A. The Geotextile shall consist of GE-180 or equivalent. The following product is prequalified for the work specified herein:

SKAPS GE-180, 8 oz Nonwoven Geotextile – manufactured by:

SKAPS Industries
316 S. Hollard Dr., Pendergrass, GA 30567

- B. The above product is prequalified based on information provided by the Geotextile Manufacturer. The Contractor is responsible for confirming with the Manufacturer that the product will meet the requirements of Table 02752-1 of this Section. Products are approved for use based on conformance testing conducted by the Owner.

2.03 CONFORMANCE TESTING

- A. Material that arrives at the site will be sampled and conformance tested by the CQA Engineer at a minimum frequency of one per 150,000 square feet of material supplied to the project with a minimum of one sample per production lot.

The Contractor shall pay for shipping the conformance samples to the geosynthetic CQA laboratory specified by the CQA engineer. Materials may be sampled at the plant at the discretion of the owner.

- B. If a test result is in nonconformance with the specifications, all material from that production lot represented by the failed test will be rejected. Rejected material may be minimized by bounding the nonconformance material with additional passing tests conducted by the geosynthetic CQA laboratory. Additional tests shall be conducted at no additional cost to the Owner. The Contractor or Manufacture shall pay for additional testing.
- C. Rejected material shall be replaced at no cost to Owner. The Contractor or Manufacture shall pay for replaced material.

2.04 DELIVERY, STORAGE, AND HANDLING

- A. Handling, storage, and care of the geotextiles following transportation to the site shall be the responsibility of the Installer. The Installer shall be liable for all damage to the materials incurred prior to final acceptance of the liner system by the CQA Engineer.
- B. The Installer shall be responsible for storage of the geotextile at the site after the material is delivered. The geotextile shall be stored off the ground and out of direct sunlight, and shall be protected from mud, dirt, dust, and any additional storage procedures required by the Geotextile Manufacturer.
- C. All rolls of geotextile shall be identified at the factory with the following:
 - 1. Manufacturer's name
 - 2. Product identification
 - 3. Lot Number
 - 4. Roll number
 - 5. Roll dimensions
- D. Geotextiles shall be handled in such a manner as to ensure they are not damaged in any way.
- E. Precautions shall be taken to prevent damage to underlying materials during placement of the geotextile.
- F. After unwrapping the geotextile from its cover, the geotextile shall not be left exposed for a period in excess of 30 days.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Filter geotextile seams shall be continuously sewn. Geotextile seams shall be overlapped a minimum of 6 inches prior to sewing. No horizontal seams shall be allowed on slopes steeper than 5 horizontal to 1 vertical.
- B. Polymeric thread, with chemical resistance properties equal to or exceeding those of the geotextile, shall be used for all sewing. The seams shall be sewn using Stitch Type 401. The seam type shall be Federal Standard Type SSa-1.
- C. The Contractor and Geosynthetics Installer shall examine the entire geotextile surface after installation to ensure that no potentially harmful foreign objects are present. Such foreign objects shall be removed and damaged geotextile shall be repaired or replaced at no cost to Owner.
- D. Use care not to damage underlying materials during installation.
- E. Prevent the geotextile from accumulating excessive dust.
- F. The Geosynthetic Installer shall be responsible for field handling, storing, deploying, seaming or connecting, temporary restraining (against wind), anchoring, and other aspects of geotextile installation.
- G. The Contractor shall accept and retain full responsibility for all materials and installation and shall be held responsible for any defects in the completed system.
- H. No equipment shall operate directly on the geotextile.

3.02 REPAIRS

- A. Any holes or tears in the geotextile shall be repaired using a geotextile patch consisting of the same geotextile material.
 - 1. On slopes inclined steeper than 10 horizontal to 1 vertical, patches shall be sewn into place with a minimum 6-inch overlap.
 - 2. On slopes inclined at 10 horizontal to 1 vertical or less, patches may be heat-bonded with a 6-inch overlap in all directions.

END OF SECTION

SECTION 02755
GEOCOMPOSITES

PART 1: GENERAL

1.01 DESCRIPTION

- A. Requirements for the manufacture, supply, installation, and quality control (QC) of geocomposites associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02223 – Gravel and Sand
- C. Section 02225 - Operations Layer
- D. Section 02751 - HDPE Geomembranes
- E. Section 02752 - Geotextiles

1.03 REFERENCES

- A. Latest version of the American Society of Testing and Materials (ASTM) standards:
 - 1. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
 - 2. ASTM D1238 - Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
 - 3. ASTM D1505 - Standard Test Method for Density of Plastics by Density - Gradient Technique
 - 4. ASTM D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
 - 5. ASTM D3786 - Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method
 - 6. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus
 - 7. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity

8. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles
9. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
10. ASTM D4716 - Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
11. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile
12. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
13. ASTM D5199 – Standard Test Method for Measuring the Nominal Thickness of Geosynthetics
14. ASTM D5261 - Standard Test Method for Measuring Mass Per Unit Area of Geotextiles
15. ASTM D7005 - Standard Test Method for Determining the Bond Strength (Ply Adhesion) of Geocomposites

B. Construction Quality Assurance Plan

1.04 SUBMITTALS

- A. Geocomposite Manufacturer shall submit to the CQA Engineer the following documentation on the raw materials used to manufacture the geocomposite:
 1. Quality control certificates issued by the raw material supplier including the production dates of the raw material used to manufacture geocomposite for the project.
 2. Results of tests conducted by the Geocomposite Manufacturer to verify the quality of the resin used to manufacture the geocomposite rolls assigned to the project and the origin of the resin and quality control certificates issued by the resin supplier.
- B. A copy of the Geocomposite Manufacturer's Quality Control Program.
- C. Quality control certificates for test results at the sampling frequency indicated by the Manufacturer's QC Plan shall be submitted.
 1. Manufacturing quality control certificates for each shift's production shall be signed by responsible parties employed by the Manufacturer (such as the production manager).

2. The quality control certificates shall include:
 - a. Roll numbers and identification
 - b. Sampling procedures
 - c. Results of the quality control tests verifying each of the properties listed in Table 02755-1
 - d. Transmissivity tests do not need to be completed as routine QC tests. However, manufacturer shall include a written statement that the product has been tested and meets or exceeds the transmissivity requirements. Tests results for the product shall be included.
- D. Manufacturer's certification that the geotextile products meet or exceed specified requirements and are 100% free of needles.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with Manufacturer's instructions and the CQA Plan.

1.06 QUALIFICATIONS

- A. Geocomposite Manufacturer shall be a well-established firm with more than two years of experience in the manufacture of geocomposites.
- B. Geocomposite Installer shall meet the requirements of the CQA Plan.

PART 2: PRODUCTS

2.01 MATERIALS

- A. The geocomposite to be used on the project shall comprise HDPE geonet drainage material with non-woven, needle-punched geotextiles bonded on the upper and lower surfaces. The geotextile component shall be triple-punched, needle-punched non-woven 6 oz/sy geotextile meeting the requirements Table 02755-1. The geotextile will be thermally bonded to the geonet component of the geocomposite. Chemical bonding is not allowed.
- B. Geocomposite shall meet the minimum properties listed in Table 02755-1.
- C. If HDPE MicroDrain overlain by 8 oz/sy geotextile material is used as an alternative to the secondary geomembrane, then Geocomposite shall not be installed as a leak detection layer on top of the secondary liner. If the Microdrain alternative is used, then the 8 oz/sy geotextile shall conform with Technical Specification 02752 and will effectively replace the leak detection geocomposite. The MicroDrain/geotextile shall also be tested for transmissivity which must meet the transmissivity requirements listed for geocomposite.

2.02 ACCEPTABLE MANUFACTURERS

- A. The Geocomposite shall consist of TN 160-2-6 or equivalent. The following product is prequalified for the work specified herein:

TN 160-2-6 drainage geocomposite – manufactured by:

SKAPS Industries
335 Athena Drive, Athens, GA 30601

1. The drainage geocomposite shall consist of 6 oz/sy geotextile laminated to both sides of 160 mil Geonet.
- B. The above product is prequalified based on information provided by the Geocomposite Manufacturer. The Contractor is responsible for confirming with the Manufacturer that the product will meet the requirements of Table 02755-1 of this Section. Products are approved for use based on conformance testing conducted by the Owner.

2.03 CONFORMANCE TESTING

- A. Material arriving at the site will be sampled and conformance tested by the CQA Engineer at a minimum frequency of one per 250,000 square feet of material supplied to the project with a minimum of one sample per production lot (geocomposite production lot). Contractor shall pay for shipping the conformance samples to the geosynthetic CQA laboratory specified by the CQA engineer. Materials may be sampled at the plant at the discretion of the owner. Materials may be sampled at the plant at the discretion of the Owner. If so, the geonet and geotextile samples should be sampled prior to bonding. As a minimum, conformance tests shall include:

1. Geonet:
 - a. Density - ASTM D1505
 - b. Thickness - ASTM D5199
2. Geotextile:
 - a. Mass Per Unit Area - ASTM D5261
 - b. Permittivity - ASTM D4491
3. Geocomposite
 - a. Peel Strength – ASTM D7005

- B. If a test result is in nonconformance with the specifications, all material from that production lot presented by the failed test shall be rejected. Rejected material may be minimized by bounding the nonconformance material with additional passing tests conducted by the geosynthetic CQA laboratory. Additional tests will be conducted at no additional cost to the Owner. The Contractor or Manufacturer shall pay for additional testing.
- C. Rejected material shall be replaced at no cost to Owner. The Contractor or Manufacture shall pay for replaced material.

2.04 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall be responsible for handling, storage, and care of the geocomposites following transportation to the site. The Contractor shall be liable for all damage to the materials incurred prior to final acceptance of the liner system by the CQA Consultant.
- B. The geocomposite shall be stored off the ground and out of direct sunlight, and shall be protected from mud, dirt, dust, and any additional storage procedures required by the Geocomposite Manufacturer.
- C. All rolls of geocomposite shall be identified at the factory with the following:
 - 1. Manufacturer's name
 - 2. Product identification
 - 3. Lot Number
 - 4. Roll number
 - 5. Roll dimensions
- D. The geocomposites shall be handled in such a manner as to ensure they are not damaged in any way.
- E. Precautions shall be taken to prevent damage to underlying layers during placement of the geocomposite.
- F. After unwrapping the geocomposite from its cover, the geocomposite shall not be left exposed for a period in excess of 45 days.

PART 3: EXECUTION

3.01 EXAMINATION

- A. Verify that other work is complete over the areas where the geocomposite is to be deployed.

3.02 PREPARATION

- A. Protect elements surrounding the work of this section from damage.

3.03 INSTALLATION

- A. The geocomposite shall be installed in accordance with the Manufacturer's recommended procedures and the CQA Plan.
- B. The CQA Engineer shall verify that all geocomposite rolls and underlying layers are free from deleterious material or debris prior to the geocomposite deployment. Dirt entrapped in the geocomposite following deployment shall be cleaned or affected geocomposite removed and replaced prior to placement of successive layers.
- C. On side-slopes, the geocomposite shall be secured in the anchor trench and shall be deployed parallel to the dip of the slope. The geocomposite panels shall be positioned to minimize wrinkles.
- D. The Installer is responsible for anchoring exposed geocomposite to protect against wind damage until subsequent layers are placed.
- E. The geocomposite shall not be welded to the geomembrane unless specified otherwise.
- F. The geocomposite shall only be cut utilizing methods and tools (i.e., a hooked utility blade) which will not damage the geocomposite.
- G. The geonet component of the geocomposite shall be overlapped a minimum of 4 inches between adjacent panels and shall be fastened by nylon ties. Ties shall be yellow or white for easy inspection. No metallic materials are allowed. Ties shall be placed every 5 feet along the lengths of adjacent panels, every 1 ft across butt-seams, and every 6 in. in any anchor trench.
- H. Butt-seams will only be allowed on grades less than 15%.
- I. The bottom geotextile component of the geocomposite shall be overlapped. The top geotextile component shall be overlapped a minimum of 6 in. and shall be continuously sewn.
- J. Polymeric thread, with chemical resistance properties equal to or exceeding those of the geotextile, shall be used for all sewing. The seams shall be sewn using Stitch Type 401. The seam type shall be Federal Standard Type SSa-1.
- K. The Geosynthetic Installer shall be responsible for field handling, storing, deploying, seaming or joining, temporary restraining (against wind), anchoring, and other aspects of geocomposite installation.

- L. The Installer shall accept and retain full responsibility for all materials and installation and shall be held responsible for any defects in the completed systems.

3.04 REPAIRS

- A. Any defects observed in the geocomposite shall be brought to the attention of the CQA Engineer.
- B. Holes or tears in the geocomposite shall be repaired with geocomposite patches extending 2 feet beyond the edges of the hole or tear. The patch shall be secured in place by using approved ties spaced at 6 inches. The ties shall extend through the geonet component of the patch and through the geotextile and geonet components of the geocomposite requiring repair. The upper geotextile component of the patch shall be heat bonded to the geotextile component of the geocomposite requiring repair.

3.05 FIELD QUALITY CONTROL

- A. Field inspection and testing shall be performed in accordance with the CQA Plan.

3.06 PROTECTION

- A. Do not permit traffic over any of the Products related to this Section.
- B. The Contractor or Geosynthetics Installer shall place all soil materials in such a manner as to ensure that:
 - 1. The geocomposite and underlying materials are not damaged
 - 2. Minimal slippage occurs between the geocomposite and the underlying geosynthetic layers
 - 3. Excess tensile stresses are not developed in the geocomposite

END OF SECTION

TABLE 02755-1

GEOCOMPOSITE PROPERTY VALUES

| PROPERTIES | QUALIFIER | UNITS | SPECIFIED VALUES | TEST METHOD |
|--------------------------------|------------------|--------------------|-----------------------------------|--------------------|
| Geonet Component: | | | | |
| Polymer Composition | minimum | % | 95% polyethylene by weight | |
| Polymer Density | min. avg. | g/cc | 0.935 | ASTM D1505 |
| Carbon Black Content | range | % | 2-3 | ASTM D1603 |
| Foaming Agents | maximum | % | 0.0 | N/A |
| Nominal Thickness | min. avg. | mils | 150 | ASTM D5199 |
| Geotextile Component: | | | | |
| Polymer Composition | minimum | % | 95% polyester or polypropylene | |
| Mass per Unit Area | min. avg. | oz/yd ² | 6 | ASTM D5261 |
| <u>Filter Requirements</u> | | | | |
| Apparent Opening Size | maximum | mm | 0.21 | ASTM D4751 |
| Permittivity | min. avg. | s ⁻¹ | 0.60 | ASTM D4491 |
| <u>Mechanical Requirements</u> | | | | |
| Grab Strength | min. avg. | lb | 160 | ASTM D4632 |
| Tear Strength | min. avg. | lb | 65 | ASTM D4533 |
| Puncture Strength | min. avg. | lb | 100 | ASTM D4833 |
| UV Stability, 500 hrs | min. avg. | % retained | 50 | ASTM D4355 |
| Geocomposites: | | | | |
| Transmissivity ¹ | minimum | m ² /s | 1x10 ⁻⁵ | ASTM D4716 |
| Peel Strength ² | min. avg. | lb/in. | 1.0 lb/in avg (0.5 lb/in min.) | ASTM D7005 |

Notes:

- (1) The design transmissivity is the hydraulic transmissivity of the geocomposite using water at 68°F ± 3°F with a hydraulic gradient of not less than 0.1, nor more than 0.5, under a compressive stress of not less than 8,000 psf. For the test, the geocomposite shall be sandwiched between HDPE geomembrane and a layer of sand. The minimum test duration will be 24 hours and the report for the test results shall include measurements at intervals over the entire test duration.
- (2) The average peel strength of all specimens tested shall be 1.0 lb/in or greater and no single specimen shall have peel strength less than 0.5 lb/in.

SECTION 02756

GEOSYNTHETIC CLAY LINER

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the manufacture, supply, installation, and quality control of the geosynthetic clay liner (GCL) associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02221 - Earthwork
- B. Section 02222 – Foundation Soil and Low-Permeability Soil Layer
- C. Section 02751 - HDPE Geomembranes
- D. Section 02752 - Geotextiles

1.03 REFERENCES

- A. Latest version of the American Society of Testing and Materials (ASTM) standards:
 - 1. ASTM D4632 – Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
 - 2. ASTM D5084 – Measurement of Hydraulic Conductivity of Saturated porous Materials using a Flexible Wall Permeameter
 - 3. ASTM D5887 - Standard Test Method for Measurement of the Index Flux through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter
 - 4. ASTM D5888 - Standard Guide for Storage and Handling of Geosynthetic Clay Liners
 - 5. ASTM D5889 - Standard Practice for Quality Control of Geosynthetic Clay Liners
 - 6. ASTM D5890 - Standard Test Method for Swell Index Measurement of Clay Mineral Component of Geosynthetic Clay Liners
 - 7. ASTM D5891 - Standard Test Method for Measurement of Fluid Loss of Clay Component of Geosynthetic Clay Liners

8. ASTM D5993 - Standard Test Method for Measuring the Mass per Unit Area of Geosynthetic Clay Liners
 9. ASTM D6141 - Standard Guide for Screening the Clay Portion of a Geosynthetic Clay Liner (GCL) for Chemical Compatibility to Liquids
 10. ASTM D6243 - Standard Test Method for Determining the Internal and Interface Shear Resistance of Geosynthetic Clay Liner by the Direct Shear Method
 11. ASTM D6496 - Standard Test Method for Determining Average Bonding Peel Strength Between the Top and Bottom Layers of Needle-Punched Geosynthetic Clay Liners
- B. Latest version of Geosynthetics Research Institute (GRI) testing methods:
1. GRI-GCL3 – Test Methods, Required Properties, and Testing Frequencies for Geosynthetic Clay Liners (GCLs)

1.04 SUBMITTALS

- A. Quality Control Submittals:
1. A copy of the manufacturer's quality control plan.
 2. Quality control (QC) certificates containing the manufacturer's QC testing results. At a minimum, QC certifications shall include the requirements listed in Part 2.02.A of this section. QC certificates shall be submitted at the frequency indicated in the Manufacturer's QC Plan for GCL continuously produced and supplied to the project and at least one per lot.
 3. Manufacturer's certificate that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with the Construction Quality Assurance Plan.

1.06 QUALIFICATIONS

- A. The Contractor shall be experienced in this installation of geosynthetic clay liners. Experience is based on verifiable project references for a minimum cumulative of 1,000,000 sf installed. In the event the Contractor is not experienced, a Representative of the geosynthetic clay liner Manufacturer shall be on site to train the Contractor, at no additional cost to the Owner.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. The GCL shall consist of Bentomat DN or equivalent. The following product is prequalified for the work specified herein:

Bentomat DN GCL - manufactured by:

CETCO Minerals Technologies
Hoffman Estates, Illinois

1. The GCL product shall consist of sodium bentonite adhered to geotextile backing on both sides. The GCL shall include internal stitching through the material that joins the backing fabrics.
- B. The above product is prequalified based on information provided by the GCL Manufacturer. The Contractor is responsible for confirming with the Manufacturer that the product will meet the requirements of Part 2.02 of this Section. Products are approved for use based on conformance testing conducted by the Owner.

2.02 CONFORMANCE TESTING

- A. Material that arrives at the site shall be sampled and conformance tested by the CQA Engineer at a minimum frequency of one per 150,000 sf of GCL supplied to the project with a minimum of one sample per lot. Contractor shall pay for shipping the conformance samples to the geosynthetic CQA laboratory specified by the CQA engineer. Materials may be sampled at the plant at the discretion of the owner. The CQA Engineer shall determine that the following specifications are met:
1. Maximum moisture content of 25% at the time of manufacture per ASTM D2216.
 2. Bentonite mass per unit area of 0.75 lbs/ft² at 0% moisture (0.95 lbs/ft² at 20% moisture) per ASTM 5993.
 3. Minimum average free swell of 24 ml per ASTM D5890.
 4. Maximum fluid loss of 18 ml per ASTM D5891.
 5. Maximum hydraulic conductivity of 5×10^{-9} cm/sec per ASTM D5084.
- B. If a test result is in non-conformance with the specifications, all material from that production lot represented by the failed test shall be rejected. Rejected material may be minimized by bounding the non-conformance material with additional passing tests conducted by the geosynthetic CQA laboratory. Additional tests and replaced material will be provided at no additional cost to the Owner. The

Contractor or Manufacturer shall pay for the additional testing and replaced materials.

2.03 DELIVERY, STORAGE, AND HANDLING

- A. Handling, storage, and care of the geosynthetic clay liner, prior to and following installation, are the responsibility of the Contractor, until Final Acceptance of the liner system by the Owner.
- B. Store and protect the geosynthetic clay liner. GCL shall be protected from ultraviolet light exposure, moisture, puncture, cutting, or other damaging or deleterious conditions. Any additional storage procedures required by the Manufacturer shall be the Contractor's responsibility.
- C. In order to prevent damage to the geosynthetic clay liner prior to installation, the following procedures shall be followed:
 - 1. Store the material in a covered work area protected from rain and moisture at all times.
 - 2. Store the material off of the ground, on pallets or other equivalent device to keep the material from contacting the ground.
- D. All rolls of GCL shall be identified at the factory with the following:
 - 1. Manufacturer's name
 - 2. Product identification
 - 3. Lot number
 - 4. Roll number
 - 5. Roll dimensions
- E. GCL rolls shall be shipped and stored in relatively opaque and water tight wrappings.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Subgrade shall be smooth, uniform, firm and free from rocks or other debris. For deployment over soil subgrade, no rocks or protrusions greater than 3/8-inch in diameter shall be exposed at the subgrade surface.
- B. Repair rough areas and any damage to the subgrade caused by installation of the lining and fill any ruts caused by equipment prior to GCL deployment.
- C. Install the GCL so that panel seams are parallel to the dip of the slope.

- D. Pull GCL panels from roll suspended at the crest of the slope. Do not install the GCL over wet subgrade, in standing water, or during precipitation events. Geomembrane shall not be placed on a GCL which is hydrated.
- E. The GCL shall be overlapped as follows:
 - 1. On slopes of 3H:1V or steeper, overlap GCL at least 18 inches along the length of the GCL panel. The overlap may be reduced to 6-inches on slopes less than 3H:1V.
 - 2. Overlap seams at least 18 inches along the ends of the GCL panel (only where end-to-end seams are allowed).
- F. Place only as much GCL each day as can be covered with HDPE liner. The GCL shall be covered by HDPE liner at the end of each working day.
- G. Use single panels of bentonite mat from the anchor trench over the crest of slope down to the lower limit of mat or an intermediate bench.
- H. End-to-end seams are only allowed on slopes of 10 percent or less and at least 5 feet from breaks in grades over 10 percent (i.e., slope hinge or slope toe).
- I. Do not drag textured geomembranes across previously installed bentonite mat. Use a smooth rub sheet between mat and geomembrane, or other methods, to prevent damage. Remove rub sheet when geomembrane is in position.
- J. All hydrated GCL shall be removed and replaced by the Contractor at no additional cost to the Owner.

3.02 GCL SEAMING

- A. Pull GCL tight to smooth out creases or irregularities in the panels.
- B. Remove all dirt and debris from the overlap area.
- C. Installation practices:
 - 1. Place 0.50 lbs/ft² of bentonite between overlapped panels. This bentonite enhancement may be eliminated where Bentomat Supergroove seams are present.
 - 2. Heat bond overlapped panels together along all seams.
- D. In the case of the prequalified material, seams shall consist of overlap only. In the case of the non-prequalified material, seams shall consist of heat bonded overlap and bentonite only. In either case, do not staple or otherwise join mechanically.

3.03 REPAIR

- A. Repair cuts, tears, or holes in the GCL by covering with a geosynthetic clay liner patch. On slopes greater than 5 percent, the patch shall overlap the edges of the hole or tear by a minimum of 2 ft in all directions. On slopes 5 percent or flatter, the patch shall overlap the edges of the hole by a minimum of 1 ft in all directions.
- B. Attach patch to panel using either non-hazardous, non-toxic adhesive as recommended by GCL manufacturer or by spot welding with hot air apparatus ("Leistering"). Attachment method shall be approved by Construction Manager (based on recommendations of the CQA Engineer) prior to use.
- C. All repairs shall be made at no additional cost to the Owner.

END OF SECTION

TABLE 02756-1

BENTONITE PROPERTIES

| Property | Qualifier | Units | Specification | Test Method |
|---|------------------|--------------|----------------------|--------------------|
| Moisture Content (at the time of manufacturing) | max. | % by Wt. | 25 | ASTM D2216 |
| Bentonite Mass per Unit Area ¹ | min. avg. | lbs/sf | 0.75 | ASTM D5993 |
| | min. avg. | ml | 24 | ASTM D5890 |
| Free Swell | max. | ml | 18 | ASTM D5891 |
| Fluid Loss | max. | cm/s | 5 x 10 ⁻⁹ | ASTM D5084 |
| Hydraulic Conductivity ² | | | | |

1. Bentonite mass per unit area reported at 0% moisture content.
2. Hydraulic conductivity performed at a confining pressure of 5 psi.

SECTION 02950

REVEGETATION AND EROSION CONTROL

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for revegetation and associated with the construction of the base liner system for WMU 6H at the Yolo County Central Landfill (YCCL).

1.02 RELATED SECTIONS

- A. Section 02110 – Clearing, Grubbing, and Stripping
- B. Section 02221 – Earthwork
- C. Section 02222 – Foundation Soil and Low-Permeability Soil Layer

1.03 REFERENCES

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

1.04 SUBMITTALS

- A. Submit the following for approval no later than 14 days prior to hydroseeding operations.
 - 1. Proposed hydroseed mix.
 - 2. Product data sheet of seed mix.
 - 3. Product data sheet of fertilizer.
 - 4. Product data sheet of hydro-mulch fiber.
 - 5. Product data sheet for stabilizing emulsion.
 - 6. Certifications that seed mix is free of noxious seed.
- B. Submit a “Certificate of Compliance” prior to field application in accordance with this Section.
- C. Submit a table of quantities of each product to be used.

1.05 CERTIFICATE OF COMPLIANCE

- A. A Certificate of Compliance shall be furnished to the Engineer prior to the use of any materials where these Specifications or the Special Provisions require that such a certificate be furnished. In addition, when so authorized in these Specifications, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The manufacturer of the material or the manufacturer of assembled materials shall sign the certificate 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.
- B. 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 the Contractor of the responsibility of supplying material that conforms to the requirements of the Plans and Specifications. Any material not conforming to the requirements of the Plans and Specifications shall be subject to rejection whether in place or not.
- C. The County reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.
- D. The form of the Certificate of Compliance and its disposition shall be as directed by the Engineer.

1.06 HYDROSEEDING WINDOW

- A. Complete hydroseeding between October 1 and October 31 or as recommended by the Engineer.

PART 2: PRODUCTS

2.01 SEED MIX

- A. General
 - 1. All seed that is required to be labeled under the California Food and Agricultural Code shall be labeled by the vendors supplying the seed. Such labels shall not be removed from seed bags until just prior to their use, and shall be readily accessible for inspection by Engineer.
 - 2. Before seeding, the Contractor shall furnish written evidence (seed label or letter) to the Engineer that seed not required to be labeled under the California Food and Agricultural Code conforms to the purity and germination requirements in Section 5A, Subsections 2 and 3.
 - 3. The percentage of seed germination shall include the germination percentage of any hard seed.

4. Seed with less than the specified purity or germination may be used under the following conditions:
 - a. The application rate for such seed shall be increased to compensate for the less than specified purity or germination.
 - b. Prior to using such seed, the Contractor shall submit the purity and germination percentages to the Engineer, and the proposed increased application rate for such seed.
 - c. No such seed shall be used before the Engineer has approved, in writing, the use of such seed and the increased application rate.
 - d. The additional seed required because of the increased application rate shall be furnished and supplied at the Contractor 's expense.
5. Seed specified shall be labeled to include the name, date (month and year) collected, and the name and address of the seed supplier. Said seed, at the time of sowing, shall be from the previous or current year's harvest.
6. All shipments of seed not accompanied by a valid California Nursery Stock Certificate shall be reported to the County Agricultural Commissioner at the point of destination for inspection and shall be held until released by the Commissioner.
7. Seed treated with mercury compounds shall not be used.
8. All legume seed shall be pellet-inoculated with a viable bacteria compatible for use with that species of seed. All inoculated seed shall be labeled to show the weight of seed, the date of inoculation, and the weight and source of inoculant materials.
9. Legume seed shall be pellet-inoculated as provided in Bulletin AXT-280, "Pellet Inoculation of Legume Seed," of the University of California, Agricultural Extension Service, *except*, the inoculant shall be added at the rate of 5 times the amount recommended on the inoculant package.
10. Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist Certified by Society of Commercial Seed Technologists.

11. Seed shall have been tested for purity and germination not more than one year prior to application of seed or seed shall be retested at the Contractor 's expense.
12. Results from testing or retesting seed for purity and germination shall be furnished to the Engineer prior to applying seed.

B. Legume Seed

1. Legume seed shall be pellet-inoculated in accordance with the provisions in said Section 5A Subsections 1h and 1i, *except*, that the inoculation shall be in accordance with the provisions in Bulletin 1842, "Range-Legume Inoculation and Nitrogen Fixation by Root-Nodule Bacteria," of the University of California, Division of Agriculture and Natural Resources, and shall be added at the rate of 5 times the amount recommended on the inoculant package.
2. Legume seed shall be sown within 90 days after inoculation or shall be re-inoculated prior to application.
3. Legume seed may be pellet-inoculated by methods other than the provisions in said Bulletin 1842 provided the following conditions are fulfilled:
 - a. The method of inoculation shall be approved by the Engineer prior to inoculating the seed.
 - b. Inoculant shall be added at the maximum rate of 2 pounds of inoculant bacteria per 100 pounds of legume seed (exclusive of adhesive materials to secure the inoculant to the seed.)
4. Commercially inoculated legume seed shall be delivered to the job site in unopened separate containers with labels attached.
5. A sample of not less than 2 ounces and not more than 4 ounces of inoculated seed shall be taken by the Engineer from the seed containers for each legume.
6. If the Contractor elects to perform the inoculation of the legume seed instead of having it performed commercially, the Contractor shall notify the Engineer at least 2 days prior to such inoculation. Legume seed inoculated by the Contractor shall be placed in a separate container and shall not be mixed with other seed prior to sampling by the Engineer. Empty bags and container lids of the inoculant bacteria that show the expiration date shall be delivered to the Engineer.
7. Legume seed shall consist of the following: (The specified percent seed mixture does not include the weight of inoculants.)

**TABLE 02950-1
LEGUME SEED PROPERTIES**

| BOTANICAL NAME (Common Name) | MINIMUM PURITY (percent) | MINIMUM GERMINATION (percent) | PERCENT OF LEGUME AND NON-LEGUME SEED MIXTURE BY WEIGHT |
|---|-------------------------------------|--|--|
| Vicia Atropurea (Purple Vetch) | 95 | 90 | 6 |
| Trifolium Incarnatum (Crimson Clover) | 95 | 90 | 6 |

C. Non-Legume Seed

1. A sample of not less than two ounces and not more than four ounces of non-legume seed shall be taken from each seed container by the Engineer.
2. Barley seed shall be a shattering variety.
3. Non-legume seed shall consist of the following:

**TABLE 02950-2
NON-LEGUME SEED PROPERTIES**

| BOTANICAL NAME (Common Name) | MINIMUM PURITY (percent) | MINIMUM GERMINATION (percent) | PERCENT OF LEGUME AND NON-LEGUME SEED MIXTURE BY WEIGHT |
|---|-------------------------------------|--|--|
| Hordeum Vulgare (Barley) | 95 | 90 | 12 |
| Bromus Californicus (California Cucamonga Brome) | 95 | 90 | 18 |
| Lolium Multiflorum (Wimmera 62 Ryegrass) | 95 | 90 | 58 |

2.02 COMMERCIAL FERTILIZER

- A. Commercial fertilizer shall conform to the requirements of the California Food and Agriculture Code.
- B. Commercial fertilizer for erosion control work shall be in pellet or granular form and shall have a minimum guaranteed chemical analysis of 16 percent nitrogen and 20 percent phosphoric acid. The fertilizer for erosion control work need not contain water-soluble potash.

2.03 STABILIZATION EMULSION

- A. Stabilization emulsion shall be nonflammable and shall have an effective life of at least one year.
- B. Stabilization emulsion shall be nontoxic to plant and animal life and non-staining to concrete or painted surfaces. In the cured state, the stabilizing emulsion shall not be re-emulsifiable. The material shall be registered with a license by the State of California, Department of Food and Agriculture, as an “auxiliary soil chemical.”
- C. Stabilization emulsion shall be miscible with water at the time of mixing and application.
- D. A certificate of Compliance for stabilization emulsion shall be furnished to the Engineer in accordance with the provisions in Section 1.05 “Certificate of Compliance.”
- E. The Contractor shall use EarthGuard® stabilizing emulsion manufactured by Terra Nova Inc. or approved alternative.

2.04 HYDRO-MULCH FIBER

- A. Fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips or similar wood materials or from newsprint, chipboard, corrugated cardboard or a combination of these processed materials, and shall be free of synthetic or plastic materials. Fiber shall contain a maximum of seven (7%) percent ash as determined by the Technical Association of the Pulp and Paper Industry (TAPPI) Standard T413. Fiber shall contain less than 250 parts per million boron, and shall be otherwise non-toxic to plant and animal life.
- B. Fiber shall have a water-holding capacity by weight of at least 1,200 percent as determined by the procedure used in the CalTrans’ Final Report, CA-DOT-TL-2176-1-76-36, “Water-holding Capacity for Hydro-mulch,” available at the Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, CA 95819.
- C. Fiber shall be of such character that the fiber will disperse into a uniform slurry when mixed with water. Water content of the fiber before mixing into slurry shall not exceed 15 percent of the dry weight of the fiber. The percentage of

water in the fiber shall be determined by California Test 226. Commercially packaged fiber shall have the moisture content of the fiber marked on the package. Fiber shall be colored to contrast with the area on which the fiber is to be applied, and shall not stain concrete or painted surfaces.

- D. A Certificate of Compliance for fiber shall be furnished to the Engineer in accordance with the provisions in Section 1.05 "Certificate of Compliance."
- E. The Contractor shall use EarthGuard® Fiber Matrix or approved alternative for the Hydro-Mulch Fiber.

2.05 WATER

- A. Suitable for use with the required hydroseed mix to be obtained by the Contractor.

2.06 HYDROSEEDING EQUIPMENT

- A. Hydroseeder that utilizes water as carrying agent and maintains continuous agitation of seed mix.
- B. Hydroseeder with operating capacity sufficient to agitate, suspend, and mix specified products into a homogeneous slurry.
- C. Distribution and discharge lines large enough to prevent clogging.
- D. Spray nozzles which provide a uniform distribution of slurry.
- E. Alternative application methods other than hydroseeding method described herein may be proposed.

PART 3: EXECUTION

3.01 LINED AREA EROSION CONTROL

- A. PREPARATION AND EXAMINATION
 - 1. Notify Engineer 2 days prior to soil stabilization operations.
 - 2. Verify areas to receive soil stabilization are graded and track-walked with dozer cleats perpendicular to slope.
 - 3. Verify soil stabilization areas are not damaged by construction activity. Correct damaged areas at no additional cost to the County.
 - 4. Coordinate soil stabilization operations with landfill operations.
 - 5. Do not apply soil stabilization material when winds affect the distribution of the material.

6. Do not apply soil stabilization material when the ground is frozen, excessively wet, or otherwise unsuitable.
7. Verify all landfill gas piping has been painted prior to soil stabilization application.

B. APPLICATION ON CELL FLOOR

1. EarthGuard soil stabilizing emulsion or approved equivalent shall be applied to the WMU 6H cell floor to provide erosion control. The cell floor shall not include hydro-mulch fiber, seed mix, or fertilizer. The soil stabilization emulsion shall be mixed with a proportion of 10 gallons per acre.

C. APPLICATION ON INTERIOR SLOPES

1. EarthGuard soil stabilizing emulsion with fiber or approved equivalent shall be applied to the interior slopes of the WMU 6H perimeter levee to provide erosion control. The interior slopes shall not include seed mix or fertilizer. The soil stabilization emulsion with fiber shall be mixed with the following proportions:

**TABLE 02950-3
WMU 6H INTERIOR SLOPES (2H:1V)
STABILIZING EMULSION MIXTURE PROPORTIONS**

| MATERIAL | UNITS PER ACRE (Slope Measurement) |
|----------------------|---|
| Hydro-mulch Fiber | 2,000 lbs |
| Stabilizing Emulsion | 10 gal |

3.02 HYDROSEEDING EXTERIOR SLOPES

A. PREPARATION AND EXAMINATION

1. Notify Engineer 2 days prior to hydroseeding operations.
2. Verify areas to receive hydroseed are graded and track-walked with dozer cleats perpendicular to slope.
3. Verify hydroseed areas are not damaged by construction activity. Correct damaged areas at no additional cost to the County.
4. Coordinate hydroseeding operations with landfill operations.

5. Do not hydroseed when winds affect the distribution of seed application.
6. Do not hydroseed when the ground is frozen, excessively wet, or otherwise unsuitable.
7. Do not hydroseed prior to October 1st unless approved by the Engineer.
8. Verify all landfill gas piping has been painted prior to hydroseed application.

B. APPLICATION

1. The application of the hydroseeding and mulching materials shall be performed in two separate applications (a two-step process) as defined in this Section.

C. Step One: Hydroseeding

1. Hydroseeding shall consist of mixing seed, commercial fertilizer, and stabilizing emulsion with fiber and water, and applying the mixture in the project area as shown on the Drawings, and other areas as directed by the Engineer.
2. The quantity of water shall be as needed for application, except that when stabilizing emulsion is specified, the ratio of total water to total stabilizing emulsion in the mixture shall be as recommended by the manufacturer of the emulsion, but shall not exceed six (6) gallons of water for each five (5) pounds of stabilizing emulsion solids specified.
3. Mixing of materials for application with hydro-seeding equipment shall be performed in a tank with a built-in continuous agitation system of sufficient operating capacity to produce a homogeneous mixture at a continuous and uniform rate. The tank shall have a minimum capacity of 1,000 gallons. The Engineer may authorize use of equipment of smaller capacity if it is demonstrated such equipment is capable of performing all operations satisfactorily.
4. A dispersing agent may be added to the mixture provided the Contractor furnishes evidence that the additive is not harmful. Any material considered harmful, as determined by the Engineer, shall not be used.
5. Any mixture containing stabilizing emulsion shall not be applied during rainy weather or when soil temperatures are below 40 degrees Fahrenheit. Pedestrians or equipment shall not be permitted to enter areas where mixtures containing stabilizing emulsion have been applied.

6. Seed, hydro-mulch fiber, stabilizing emulsion, and commercial fertilizer shall be supplied per these Specifications.
7. The following mixture in the proportions indicated shall be applied with hydroseeding equipment within 60 minutes after the seed has been added to the mixture:

TABLE 02950-4
SEED MIXTURE PROPORTIONS

| MATERIAL | UNITS PER ACRE (Slope Measurement) |
|------------------------------------|---|
| Legume and Non-Legume Seed Mixture | 100 lbs |
| Hydro-mulch Fiber | 2,000 lbs |
| Stabilizing Emulsion | 10 gal |
| Commercial Fertilizer | 300 lbs |

8. When premixed seed from containers is added to hydro-seeding equipment, the entire contents of the containers shall be used in preparing the hydro-seeding mixture. Partial use of a container of premixed seed will not be permitted in a hydroseeding mixture.
9. The hydroseed proportions may be changed by the Engineer to meet field conditions.

D. Step Two: Straw

1. Straw shall be spread on the surfaces specified after hydroseeding mixture in step-one has been applied.
2. Straw shall be applied to the surface with an application rate of two tons per acre.

3.03 HYDROSEED APPLICATION

- A. Achieve uniform visible coat distributed over entire hydromulch-seeding areas in specified proportions.
- B. Do not drive hydroseeding equipment on completed areas. Hydroseeding tanker truck is only permitted on access roads, perimeter levees and other areas where vegetative cover soil is at least 3 feet. Do not drive any hydroseeding equipment on the side slopes.
- C. Hand seed where hydroseeding is impractical or is inaccessible to equipment.

3.04 CLEANING AND REPAIR

- A. Remove excess material and waste from site.
- B. Repair damaged areas at no additional cost to County.

3.05 WARRANTY AND ACCEPTANCE

- A. Completed areas will be inspected after hydroseeding operations. Completed areas will be conditionally accepted based on compliance with specified materials, application rates, execution, and maintenance.
- B. All completed areas must be guaranteed for one year from the date of conditional acceptance to be in healthy, stable, and flourishing conditions.
- C. At the end of the one-year warranty period, Engineer and Contractor will perform additional inspection of completed areas. Repair and/or replace defective areas noted at no expense to the County.

- END OF SECTION

**PART 4 – BID AND CONTRACT
DOCUMENTS**

COUNTY OF YOLO
DEPARTMENT OF COMMUNITY SERVICES
DIVISION OF INTEGRATED WASTE MANAGEMENT
44090 COUNTY ROAD 28H, WOODLAND, CALIFORNIA 95776
(530) 666-8852

BID DOCUMENTS,
PROPOSAL, BOND FORMS,
AND AGREEMENT

FOR THE

CONSTRUCTION OF WASTE MANAGEMENT UNIT 6 MODULE H
BASE LINER SYSTEM

NOVEMBER 9, 2021

IN THE
COUNTY OF YOLO

W.O. 9358

BID OPENING: DECEMBER 10, 2021 @ 3PM
County of Yolo
Yolo County Central Landfill
Conference Room
44090 County Road 28H
Woodland, CA 95776

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BIDDER'S CHECKLIST

This checklist has been prepared and furnished to aid bidders in including all necessary supporting information with their proposal. Bidders shall also reference the Plans and Specifications in preparing their proposals, including the Notice to Contractors and Section 2 of the General Provisions, which provides the proposal requirements and conditions. Bidder's submittals should include, but are not limited to, the following:

| ITEM | CHECKED |
|---|---------|
| 1. Proposal (Bid) w/ Addendum Acknowledgment | _____ |
| 2. Bid Schedule | _____ |
| 3. Bidder's Statement of Financial Responsibility, Technical Ability and Experience | _____ |
| 3a. Additional Satisfactory Evidence | _____ |
| 3b. Proof of Compliance with State of California Division of Apprenticeship Standards Approved Joint Labor and Management Apprenticeship Program | _____ |
| 4. Debarment and Suspension | _____ |
| 5. List of Subcontractors | _____ |
| 6. Noncollusion Declaration | _____ |
| 7. Iran Contracting Act Certification | _____ |
| 8. Public Works Contractor Registration Certification | _____ |
| 9. Proposal Guarantee | _____ |

(DO NOT DETACH)

PROPOSAL

to the
DEPARTMENT OF COMMUNITY SERVICES
DIVISION OF INTEGRATED WASTE MANAGEMENT
COUNTY OF YOLO

WORK ORDER NO. 9358

NAME OF BIDDER

BUSINESS ADDRESS

CITY, STATE, ZIP

TELEPHONE NO: AREA CODE (____)

FAX NO.: AREA CODE (____)

In response to the Notice to Contractors and in accordance with the Project Plans and Specifications (including the payment of not less than the minimum wage rates set forth therein) and the Contract annexed hereto, the undersigned hereby proposes to the County to furnish all labor, technical and professional services, supervision, materials and equipment, other than materials and equipment specified as furnished by the County, and to perform all operations necessary and required to construct the project in accordance with the provisions of the Plans and Specifications and any addenda thereto, and at the prices stated opposite the respective items set forth in the Bid Schedule.

The Project Plans and Specifications for the work to be done are dated NOVEMBER 9TH, 2021 and are entitled:

PLANS AND SPECIFICATIONS
FOR THE
CONSTRUCTION OF WASTE MANAGEMENT UNIT 6 MODULE H
BASE LINER SYSTEM
at the
YOLO COUNTY CENTRAL LANDFILL

The undersigned certifies that it has examined and is fully familiar with all of the provisions of the Plans and Specifications and any addenda thereto; that it has carefully checked all of the words and figures shown in its Bid Schedule; that it has carefully reviewed the accuracy of all statements in this proposal and attachments hereto; and that it understands and agrees

that the County will not be responsible for any errors or omissions on the part of the undersigned in preparing this proposal.

The undersigned has by careful examination of the Plans and Specification and any addenda thereto, and by examination of the actual site conditions, satisfied itself as to the nature and location of all work, the general and local conditions to be encountered in the performance of any work, the requirements of the Contract and all other matters which can in any way affect the work or the cost thereof.

This proposal constitutes a firm offer to the County which cannot be withdrawn for 120 days after the date set for opening of proposals, or until a contract is executed by the County and a third party, whichever is earlier.

Enclosed find cash, bidder's bond, or cashier's or certified check No. _____ from the _____ Bank in the amount of _____, which is not less than ten percent (10%) of this bid, payable to the County of Yolo as bid security and which is given as a guarantee that the undersigned will enter into a contract and provide the necessary bonds and certificates of insurance if awarded the work.

If awarded a Contract, the undersigned agrees to execute and deliver to the County within ten (10) days after date of receipt of Notice of Award, a signed Contract and the necessary Performance Bond, Payment Bond, Certificates of Insurance and Endorsements, and Tax Identification Number.

The undersigned certifies that it is licensed in accordance with the California law providing for the registration of Contractors, License No. _____, Expiration Date _____, class of license(s) _____. If the bidder is a joint venture, each member of the joint venture must include the above information.

The following forms, which have been completed and executed by undersigned bidder, are incorporated by this reference and made a part of this proposal:

- BID SCHEDULE
- BIDDER'S STATEMENT OF FINANCIAL RESPONSIBILITY, TECHNICAL ABILITY, AND EXPERIENCE
- DEBARMENT AND SUSPENSION
- LIST OF SUBCONTRACTORS
- NONCOLLUSION DECLARATION
- IRAN CONTRACTING ACT CERTIFICATION
- PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION
- PROPOSAL GUARANTEE

The undersigned acknowledges receipt, understanding, and full consideration of the following addenda to the Plans and Specifications:

Addenda No. _____

(Fill in addenda numbers if addenda have been received and insert, in this Proposal, any Bid Schedule sheets that were received as part of the addenda.)

[SIGNATURE AND CERTIFICATION ON THE NEXT PAGE]

The undersigned acknowledges that the representations made herein are made under penalty of perjury under the laws of the State of California.

Bidder:

Bidder's Business Address:

(Company Name)

By _____
(Signature)

(Type or print name)

(Title)

(Where signed) (City, State)

(corporate seal)

Dated: _____, 20_____
State of Incorporation: _____

Names of individual members of firm or names and titles of all officers of corporation and their addresses are listed below:

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

Name _____ Title _____

Complete Address _____

Phone _____ FAX _____

BID SCHEDULE
CONTRACT PRICE SCHEDULE

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit | Unit Price | Total Cost |
|----------|---|----------------------------------|-------------------|------|------------|------------|
| 1 | Mobilization/Demobilization | 01025 | 1 | LS | | |
| 2 | Payment Bond | 01025 | 1 | LS | | |
| 3 | Performance Bond | 01025 | 1 | LS | | |
| 4 | Surveying and As-Built Drawings | 01025 | 1 | LS | | |
| 5 | General Fill | 01025 | 1,000 | CY | | |
| 6 | Subgrade Preparation | 01025 | 900,000 | SF | | |
| 7 | Low Permeability Soil Liner Test Pad | 01025 | 1 | LS | | |
| 8 | Excavation | 01025 | 1,000 | CY | | |
| 9 | Geosynthetic Clay Layer (GCL) | 01025 | 22,000 | SF | | |
| 10 | Secondary 40-Mil HDPE Geomembrane | 01025 | 710,000 | SF | | |
| 11 | Leak Detection System (LDS) Geocomposite Drainage Layer | 01025 | 710,000 | SF | | |
| 12 | LDS and Lysimeter Sump Systems, Bollards, Pipe Anchors | 01025 | 1 | LS | | |
| 13 | Compacted Soil Foundation Layer | 01025 | 76,000 | CY | | |
| 14 | Low Permeability Soil Layer for WMU 6H | 01025 | 51,000 | CY | | |
| 15 | Primary 60-Mil HDPE Geomembrane | 01025 | 734,000 | SF | | |
| 16 | LCRS Geocomposite | 01025 | 74,000 | SF | | |
| 17 | LCRS Gravel | 01025 | 19,550 | CY | | |
| 18 | 2-Inch Diameter HDPE LCRS Solid Injection Pipe | 01025 | 1,700 | LF | | |
| 19 | 2-Inch Diameter HDPE LCRS Perforated Injection Pipe | 01025 | 800 | LF | | |
| 20 | 8 oz./sy Nonwoven Geotextile | 01025 | 650,000 | SF | | |
| 21 | Sand for LCRS Drainage Trenches | 01025 | 1 | CY | | |
| 22a | Operations Layer – 1-Foot Thick Soil Cover | 01025 | 9,000 | CY | | |

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit | Unit Price | Total Cost |
|-----------|--|----------------------------------|-------------------|------|------------|------------|
| 22b | Operations Layer – 2-Foot Thick Ground Wood Cover | 01025 | 36,000 | CY | | |
| 23 | 6-inch Diameter HDPE LCRS Pipe | 01025 | 1,400 | LF | | |
| 24 | 4-Inch Diameter HDPE LDS, Lysimeter, and LFG Pipes | 01025 | 2,500 | LF | | |
| 25 | Erosion Control Hydroseeding Exterior Slopes | 01025 | 3 | AC | | |
| 26 | Perimeter Levee Road Aggregate Base | 01025 | 500 | CY | | |
| 27 | 6-Inch Diameter HDPE Liquids Transmission Pipe | 01025 | 500 | LF | | |
| 28 | Preparation for Electrical Leak Location Survey | 01025 | 1 | LS | | |
| 29 | Prepare Drainage and Erosion Control Plan | 01025 | 1 | LS | | |
| 30 | Water Pollution Control | 01025 | 1 | LS | | |
| 31 | Waste Excavation and Removal | 01025 | 300 | CY | | |
| Total Bid | | | | | | |

Notes:

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

The costs for any work shown or required in the Plans and Specifications, but not specifically identified as a line item are to be included in the related line items and no additional compensation shall be due to Contractor for the performance of the work.

The bidder shall set forth for each unit basis item of work an item price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Total" column shall be the extension of the item price bid on the basis of the estimated quantity for the item.

In case of discrepancy between the item price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item price or item total, whichever most closely approximates percentage-wise the unit price or item total in the County's final estimate of cost.

For purposes of evaluating bids, the County will correct any apparent errors in the extension of unit prices and any apparent errors in the addition of lump sum and extended prices.

The estimated quantities for unit price items are for purposes of comparing bids only and the County makes no representation that the actual quantities of work performed will not vary from the estimates. Final payment shall be determined by the Engineer from measured quantities of work performed based upon the unit price.

**BIDDER’S STATEMENT OF FINANCIAL RESPONSIBILITY,
TECHNICAL ABILITY, AND EXPERIENCE**

The Bidder is required to state its financial responsibility, technical ability and what work of a similar character to that included in the proposed Contract he or she has successfully performed and give reference which will enable the Board of Supervisors to judge his or her responsibility, experience, skill, and business standing.

Bidder shall also provide Additional Satisfactory Evidence, on its own form, as defined in Section 11-4 of the Special Provisions.

For bids in excess of seven hundred fifty thousand (\$750,000), the bidder must submit proof of participation in a State of California Division of Apprenticeship Standards approved joint labor and management apprenticeship program.

A. INFORMATION ABOUT BIDDER

(Indicate not applicable (“N/A”) where appropriate.)

NOTE: Where bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

Facsimile Number

Telephone Number

Email Address

4.0 How many years has Bidder’s organization been in business as a Contractor?

5.0 How many years has Bidder’s organization been in business under its present name?

5.1 Under what other or former names has Bidder's organization operated? _____

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President's Name: _____

6.4 Vice-President's Name(s): _____

6.5 Secretary's Name: _____

6.6 Treasurer's Name: _____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

8.0 If other than a corporation or partnership, describe organization and name principals:

9.0 List other states in which Bidder's organization is legally qualified to do business.

10.0 What type of work does the Bidder normally perform with its own forces?

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

13.0 List Trade References:

14.0 List Bank References (Bank and Branch Address):

15.0 Name of Bonding Company and Name and Address of Agent:

D. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

The bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity. The bidder may provide a current resume for each key personnel that is fully responsive to each question below.

1. List each person’s job title, name and percent of time to be allocated to this project:

2. Summarize each person’s specialized education:

3. List each person’s years of construction experience relevant to the project:

4. Summarize such experience:

Bidder agrees that personnel named in this bid will remain on this project until completion of all relevant work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the County.

E. ADDITIONAL BIDDER'S STATEMENTS:

If the bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

Name of Bidder_____

Signature_____

Name and Title_____

Dated_____

DEBARMENT AND SUSPENSION
(Public Contract Code Section 6109)

Contractor represents and warrants that it is eligible to bid and work on this project pursuant to Sections 1777.1 and 1777.7 of the California Labor Code and other applicable provisions of law. Further, Contractor acknowledges that it is prohibited from performing work on this project with a subcontractor who is ineligible to perform work on public works project pursuant to Sections 1777.1 and 1777.7.

Signature: _____

Printed Name: _____

Title: _____

Firm Name: _____

Date: _____

LIST OF SUBCONTRACTORS

The subcontractor listed below will perform work or labor or render service to the contractor in or about the construction of the work or improvement, or are subcontractors licensed by the State of California who will, under subcontract to the contractor, specially fabricate and install a portion of the work or improvement according to detailed drawings contained in the Contract Documents, in an amount in excess of one-half of one percent (1/2 of 1%) of the contractor's total bid. Notwithstanding the foregoing, if the work involves the construction of streets and highways, then the bidder shall list each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half of one percent (0.5%) of the bidder's total bid price or \$10,000, whichever is greater. No additional time shall be granted to provide the below requested information.

In compliance with the Subletting and Subcontracting Fair Practices Act Chapter 4 (commencing at Section 4100), Part 1, Division 2 of the California Public Contract Code, the bidder shall set forth below:

- a) The name and the location of the place of business;
- b) The California contractor license number;
- c) The DIR public works contractor registration number; and
- d) The portion of the work which will be done by each subcontractor.

If a bidder fails to specify a subcontractor or if a contractor specifies more than one subcontractor for the same portion of work, then the bidder shall be deemed to have agreed that it is fully qualified to perform that portion of work and that it shall perform that portion itself.

| Work to be done by Subcontractor | Name of Subcontractor | Location of Business | CSLB Contractor License No. | DIR Registration Number |
|----------------------------------|-----------------------|----------------------|-----------------------------|-------------------------|
| | | | | |

| Work to be done by Subcontractor | Name of Subcontractor | Location of Business | CSLB Contractor License No. | DIR Registration Number |
|---|------------------------------|-----------------------------|------------------------------------|--------------------------------|
| | | | | |
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| Work to be done by Subcontractor | Name of Subcontractor | Location of Business | CSLB Contractor License No. | DIR Registration Number |
|----------------------------------|-----------------------|----------------------|-----------------------------|-------------------------|
| | | | | |
| | | | | |

(Attach additional sheets if necessary)

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

**NONCOLLUSION DECLARATION TO BE EXECUTED
BY BIDDER AND SUBMITTED WITH BID**
(Public Contract Code Section 7106)

State of California)
) ss.
County of Yolo)

The undersigned declares:

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

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

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

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

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

Note: Bidders are cautioned that making a false certification may subject the bidder to criminal prosecution.

IRAN CONTRACTING ACT

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

The Contractor is not:

- (1) identified on the current list of person and entities engaged in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or
- (2) a financial instruction that extends, for 45 days or more, credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

The County has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the County will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

The amount of the Contract payable to the Contractor for the Project does not exceed \$1,000,000.

Signature: _____

Printed Name: _____

Title: _____

Firm Name: _____

Date: _____

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

PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations. If the project is exempt from the contractor registration requirements pursuant to the small project exemption under Labor Code Sections 1725.5 and 1771.1, please mark "Yes" in response to "Small Project Exemption."

Name of Bidder: _____

DIR Registration Number: _____

DIR Registration Expiration: _____

Small Project Exemption: _____ Yes or _____ No

Unless Bidder is exempt pursuant to the small project exemption, Bidder further acknowledges:

1. Bidder shall maintain a current DIR registration for the duration of the project.
2. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Bidder _____

Signature _____

Name and Title _____

Dated _____

PROPOSAL GUARANTEE

[Note: Not required when other form of bidder’s security, e.g. cash, certified check or cashier’s check, accompanies bid.]

The makers of this bond are, _____, as Principal, and _____, as Surety and are held and firmly bound unto the County of Yolo, organized and operating under the laws of the State of California, hereinafter called the County, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to the County for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20____, for the CONSTRUCTION OF WASTE MANAGEMENT UNIT 6 MODULE H BASE LINER SYSTEM.

If the Principal does not withdraw its bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the County as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the County and judgment is recovered, the Surety shall pay all litigation expenses incurred by the County in such suit, including reasonable attorneys’ fees, court costs, expert witness fees and expenses.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

Contractor/ Principal
By _____
Title _____

(Corporate Seal)

Surety
By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

Notary Acknowledgment

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

STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally

appeared _____, who proved to me on the basis of satisfactory

Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

WITNESS my hand and official seal.

Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- Individual
 - Corporate Officer

 - Partner(s) Limited General
 - Attorney-In-Fact
 - Trustee(s)
 - Guardian/Conservator
 - Other: _____
- Signer is representing:
Name Of Person(s) Or Entity(ies)

Title or Type of Document

Number of Pages

Date of Document

Signer(s) Other Than Named Above

Notary Acknowledgment

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

STATE OF CALIFORNIA
 COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally
 appeared _____, who proved to me on the basis of satisfactory

Name(s) of Signer(s)

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

WITNESS my hand and official seal.

 Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

| CAPACITY CLAIMED BY SIGNER | DESCRIPTION OF ATTACHED DOCUMENT |
|--|---|
| <input type="checkbox"/> Individual | |
| <input type="checkbox"/> Corporate Officer | |
| _____ Title(s) | _____ Title or Type of Document |
| <input type="checkbox"/> Partner(s) <input type="checkbox"/> Limited <input type="checkbox"/> General | _____ Number of Pages |
| <input type="checkbox"/> Attorney-In-Fact | |
| <input type="checkbox"/> Trustee(s) | |
| <input type="checkbox"/> Guardian/Conservator | _____ Date of Document |
| <input type="checkbox"/> Other: Signer is representing: Name Of Person(s) Or Entity(ies) | |
| _____ _____ _____ | _____ Signer(s) Other Than Named Above |

COUNTY OF YOLO, CALIFORNIA
AGREEMENT NO. _____

County Work Order No. 9358

THIS AGREEMENT, (“Agreement” or “Contract”) made and entered into on this ____ day of DECEMBER, between the COUNTY OF YOLO, a political subdivision of the State of California (“COUNTY”), and _____, (“CONTRACTOR”), a California 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, furnish all the labor, technical and professional services, supervision, materials, and equipment, except such as are mentioned in the Contract Documents referenced below to be furnished by the COUNTY, and perform all operations necessary to construct and complete in a good, workmanlike and substantial manner and to the satisfaction of the COUNTY, the work described in the Contract Documents for the public work of improvement titled:

**PLANS AND SPECIFICATIONS FOR THE
CONSTRUCTION OF WASTE MANAGEMENT UNIT 6 MODULE H
BASE LINER SYSTEM
at the
YOLO COUNTY CENTRAL LANDFILL
Dated DECEMBER 10, 2021**

ARTICLE II. Time is of the essence in the performance of the work. The work shall be commenced and completed pursuant to Section 11-5 of the Special Provisions.

ARTICLE III. The COUNTY shall pay to the CONTRACTOR as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of _____ Dollars (\$ _____), hereinafter, the Contract Price. Payment shall be made as set forth in the General Provisions. COUNTY will pay to CONTRACTOR compensation based upon the prices set forth in the Contract Price Schedule.

ARTICLE IV. By its signature hereunder, CONTRACTOR certifies that it is aware of the provisions of Section 3700 of the Labor Code et seq. 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 provide indemnification and defense as set forth in the General Provisions.

ARTICLE VI. The “Contract Documents” include the following documents, each of which is incorporated into this Contract by reference:

- Notice to Contractors
- Addenda
- Proposal, including all required forms
- Performance Bond
- Payment Bond
- General Provisions
- Special Provisions
- Technical Provisions
- Standard Drawings
- Project Drawings
- Standard Construction Specifications
- Change Orders executed by the COUNTY

The CONTRACTOR shall complete the Work in strict accordance with all of the Contract Documents.

All of the Contract Documents are intended to be complementary. Work required by one of the Contract Documents and not by others shall be done as if required by all. In the event of a conflict, the various Contract Documents will be given effect in the order set forth in the General Provisions.

ARTICLE VII. Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The CONTRACTOR shall comply with all requirements of applicable federal, state and local laws, rules and regulations, including, but not limited to, the provisions of the California Labor Code and California Public Contract Code which are applicable to this work.

CONTRACT PRICE SCHEDULE

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit | Unit Price | Total Cost |
|----------|--------------------------------------|----------------------------------|-------------------|------|------------|------------|
| 1 | Mobilization/Demobilization | 01025 | 1 | LS | | |
| 2 | Payment Bond | 01025 | 1 | LS | | |
| 3 | Performance Bond | 01025 | 1 | LS | | |
| 4 | Surveying and As-Built Drawings | 01025 | 1 | LS | | |
| 5 | General Fill | 01025 | 1,000 | CY | | |
| 6 | Subgrade Preparation | 01025 | 900,000 | SF | | |
| 7 | Low Permeability Soil Liner Test Pad | 01025 | 1 | LS | | |

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit | Unit Price | Total Cost |
|----------|---|----------------------------------|-------------------|------|------------|------------|
| 8 | Excavation | 01025 | 1,000 | CY | | |
| 9 | Geosynthetic Clay Layer (GCL) | 01025 | 22,000 | SF | | |
| 10 | Secondary 40-Mil HDPE Geomembrane | 01025 | 710,000 | SF | | |
| 11 | Leak Detection System (LDS) Geocomposite Drainage Layer | 01025 | 710,000 | SF | | |
| 12 | LDS and Lysimeter Sump Systems, Bollards, Pipe Anchors | 01025 | 1 | LS | | |
| 13 | Compacted Soil Foundation Layer | 01025 | 76,000 | CY | | |
| 14 | Low Permeability Soil Layer for WMU 6H | 01025 | 51,000 | CY | | |
| 15 | Primary 60-Mil HDPE Geomembrane | 01025 | 734,000 | SF | | |
| 16 | LCRS Geocomposite | 01025 | 74,000 | SF | | |
| 17 | LCRS Gravel | 01025 | 19,550 | CY | | |
| 18 | 2-Inch Diameter HDPE LCRS Solid Injection Pipe | 01025 | 1,700 | LF | | |
| 19 | 2-Inch Diameter HDPE LCRS Perforated Injection Pipe | 01025 | 800 | LF | | |
| 20 | 8 oz./sy Nonwoven Geotextile | 01025 | 650,000 | SF | | |
| 21 | Sand for LCRS Drainage Trenches | 01025 | 1 | CY | | |
| 22a | Operations Layer – 1-Foot Thick Soil Cover | 01025 | 9,000 | CY | | |
| 22b | Operations Layer – 2-Foot Thick Ground Wood Cover | 01025 | 36,000 | CY | | |
| 23 | 6-inch Diameter HDPE LCRS Pipe | 01025 | 1,400 | LF | | |
| 24 | 4-Inch Diameter HDPE LDS, Lysimeter, and LFG Pipes | 01025 | 2,500 | LF | | |
| 25 | Erosion Control Hydroseeding Exterior Slopes | 01025 | 3 | AC | | |
| 26 | Perimeter Levee Road Aggregate Base | 01025 | 500 | CY | | |
| 27 | 6-Inch Diameter HDPE Liquids Transmission Pipe | 01025 | 500 | LF | | |

| Item No. | Description | Section Reference ⁽¹⁾ | Estimate Quantity | Unit | Unit Price | Total Cost |
|----------|---|----------------------------------|-------------------|------|------------|------------|
| 28 | Preparation for Electrical Leak Location Survey | 01025 | 1 | LS | | |
| 29 | Prepare Drainage and Erosion Control Plan | 01025 | 1 | LS | | |
| 30 | Water Pollution Control | 01025 | 1 | LS | | |
| 31 | Waste Excavation and Removal | 01025 | 300 | CY | | |
| Total | | | | | | |

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 requirements attached hereto as Exhibit A and incorporated herein by this reference 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 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 Superior 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, including all exhibits expressly incorporated therein, 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.

ARTICLE XV. Contractor certifies that any service provided pursuant to this Agreement shall be without discrimination based on color, race, creed, national origin, religion, sex, age, sexual preferences, or physical or mental disability in accordance with all applicable Federal, State and County laws and regulations and any administrative directives established by the County Board of Supervisors or the County Administrative Officer. For the purpose of this Agreement, distinctions on the grounds of color, race, creed, national origin, religion, sex, age, sexual preferences, or physical or mental disability include but are not limited to the following: denying a participant any service or benefit which is different, or is provided in a different manner or at a different time from that provided to other participants under this Agreement; subjecting a participant to segregation or separate treatment in any way in the enjoyment or any advantage or privilege enjoyed by others receiving any service or benefit; treating a participant differently from others in determining whether the participant has satisfied any admission, enrollment quota, eligibility, membership, or other requirement or condition which individuals must meet in order to be provided any service or benefit; and the assignment of times or places for the provision of services.

ARTICLE XVI. Upon its execution, this Agreement (including all exhibits and attachments) shall be subject to disclosure pursuant to the California Public Records Act.

ARTICLE XVII. All notices shall be in writing and either served by personal delivery or mailed to the other party as designated in the Contract Documents. Written notice to the CONTRACTOR shall be addressed to CONTRACTOR's principal place of business unless CONTRACTOR designates another address in writing for service of notice. Notice to the COUNTY shall be addressed to the COUNTY as designated in the Notice to Contractors unless COUNTY designates another address in writing for service of notice. Notice shall be

effective upon receipt or five (5) calendar days after being sent by first class mail, whichever is earlier. Notice given by facsimile shall not be effective unless acknowledged in writing by the receiving party.

ARTICLE XVIII. Should a change be contemplated in the name or nature of the CONTRACTOR's legal entity, the CONTRACTOR shall first notify the COUNTY in order that proper steps may be taken to have the change reflected on the Contract and all related documents. No change of CONTRACTOR's name or nature will affect the COUNTY's rights under the Contract, including but not limited to the bonds.

IN WITNESS WHEREOF, the parties to this Agreement have executed this Agreement as of the date set forth above.

COUNTY:

CONTRACTOR:

COUNTY OF YOLO

CONTRACTOR

By: _____
Ramin Yazdani, Director,
Integrate Waste Management
Yolo County Department of Community Services

By: _____
Name: _____
Title: _____

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

CA Department of Industrial Relations Public Works Contractor Identification Number

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.
1. Minimum Coverages (as applicable) - Insurance coverage shall be with limits not less than the following:
 - a. **Comprehensive General Liability** – \$1,000,000/occurrence and \$2,000,000/aggregate
 - b. **Automobile Liability** – \$1,000,000/occurrence (general) and \$500,000/occurrence (property) [include coverage for Hired and Non-owned vehicles.]
 - c. **Professional Liability/Malpractice/Errors and Omissions** – \$1,000,000/occurrence and \$2,000,000/aggregate (If any engineer, architect, attorney, accountant, medical professional, psychologist, or other licensed professional performs work under a contract, the contractor must provide this insurance. If not, then this requirement automatically does not apply.)
 - d. **Workers’ Compensation** – Statutory Limits/**Employers’ Liability** - \$1,000,000/accident for bodily injury or disease (If no employees, this requirement automatically does not apply.)
 2. The County, its officers, agents, employees and volunteers shall be named as additional insured on all but the workers’ compensation and professional liability coverages. [NOTE: 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.] It shall be a requirement under this agreement that any available insurance proceeds broader than or in excess of the specified minimum Insurance coverage requirements and/or limits shall be available to the Additional Insured. Furthermore, the requirements for coverage and limits shall be (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any Insurance policy or proceeds available to the named Insured; whichever is greater.
 - a. The Additional Insured coverage under the Contractor’s policy shall be “primary and non-contributory” and will not seek contribution from the County’s insurance or self insurance and shall be at least as broad as CG 20 01 04 13.

- b. The limits of Insurance required in this agreement may be satisfied by a combination of primary and umbrella or excess Insurance. Any umbrella or excess Insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non contributory basis for the benefit of the County of Yolo (if agreed to in a written contract or agreement) before the County's own Insurance or self insurance shall be called upon to protect it as a named insured.
3. 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 the 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 the Contractor changes to a new carrier prior to receipt of any payments due.
4. The 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.
5. Any deductibles or self-insured retentions must be declared to and are subject to the approval of the County Risk Manager. All self-insured retentions (SIR) must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied either by the named Insured or Yolo County.
6. 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).
7. 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.
8. The policies shall cover all activities of Contractor, its officers, employees, agents and volunteers arising out of or in connection with this Agreement.
9. For any claims relating to this Agreement, the 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.

10. The insurer shall waive all rights of subrogation against the County, its officers, employees, agents and volunteers.
- B.** Prior to commencing services pursuant to this Agreement, Contractor shall furnish the County 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.
- C.** During the term of this Agreement, Contractor shall furnish the County 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. Yolo County reserves the right to obtain a full certified copy of any Insurance policy and endorsements. Failure to exercise this right shall not constitute a waiver of right to exercise later.
- D.** Contractor agrees to include with all Subcontractors in their subcontract the same requirements and provisions of this agreement including the indemnity and Insurance requirements to the extent they apply to the scope of the Subcontractor's work. Subcontractors hired by Contractor agree to be bound to Contractor and the County of Yolo in the same manner and to the same extent as Contractor is bound to the County of Yolo under the Contract Documents. Subcontractor further agrees to include these same provisions with any Sub-subcontractor. A copy of the Owner Contract Document Indemnity and Insurance provisions will be furnished to the Subcontractor upon request. The General Contractor/**and or Contractor** shall require all Subcontractors to provide a valid certificate of insurance and the required endorsements included in the agreement prior to commencement of any work and General Contractor/**and or Contractor** will provide proof of compliance to the County of Yolo.
- E.** Contractor shall maintain insurance as required by this contract to the fullest amount allowed by law and shall maintain insurance for a minimum of five years following the completion of this project. In the event Contractor fails to obtain or maintain completed operations coverage as required by this agreement, the County at its sole discretion may purchase the coverage required and the cost will be paid by Contractor.

PAYMENT BOND

BOND NO. _____

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the County of Yolo, State of California, ("Owner") has awarded to _____ ("Contractor/Principal") a contract (County Agreement No. _____, dated _____, 2021, referred to as the "Agreement") for the work described as _____. The Agreement is incorporated by this reference into this Payment Bond ("Bond"); and

WHEREAS, Contractor/Principal is required to furnish a bond in connection with the Agreement and pursuant to California Civil Code section 9550;

NOW, THEREFORE, we, _____ the undersigned Contractor/Principal, and _____, ("Surety"), a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the County of Yolo, and to any and all persons, companies, or corporations entitled by law to file stop payment notices under California Civil Code Section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____ DOLLARS (\$ _____), which such sum being not less than one hundred percent (100%) of the total amount payable by the Owner under the terms of the Agreement, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if Contractor/Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Section 9550 et seq.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover

on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Owner and Contractor/Principal or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of sections 2819 and 2845 of the California Civil Code.

Any notice to Surety may be given in the manner specified in the Agreement and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

IN WITNESS WHEREOF, two identical counterparts of this Bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by Contractor/Principal and Surety above named, on the ____ day of _____, 20__.

Contractor/Principal (SEAL)

By: _____
Contractor/'s Representative

Contractor/Principal's Address

City, State, Zip

Surety (SEAL)

By: _____
Surety's Representative

Surety's Address

City, State, Zip

Telephone Number

NOTE: Signatures of those executing for Surety must be properly acknowledged. The bond must be accompanied by a properly acknowledged Power of Attorney from the Surety authorizing its agent to bind it to this bond. A copy of such Power of Attorney must be on file with the Yolo County Clerk.

Notary Acknowledgment

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

STATE OF CALIFORNIA
 COUNTY OF _____

On _____, 20____, before me, _____, Notary Public, personally

appeared _____, who proved to me on the basis of satisfactory

evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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

WITNESS my hand and official seal.

 Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

DESCRIPTION OF ATTACHED DOCUMENT

- Individual
 - Corporate Officer
-
- Title(s)
- Partner(s) Limited
 - General
 - Attorney-In-Fact
 - Trustee(s)
 - Guardian/Conservator
 - Other:
- Signer is representing:
 Name Of Person(s) Or Entity(ies)

Title or Type of Document

Number of Pages

Date of Document

Signer(s) Other Than Named Above

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the County of Yolo, organized and operating under the laws of the State of California, (hereinafter referred to as the "County") has awarded to _____, (hereinafter referred to as the "Contractor") an agreement for **Contract No.** _____, (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract for the Project dated _____, (hereinafter referred to as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____ as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held and firmly bound unto the County in the sum of _____ DOLLARS, (\$ _____), said sum being not less than one hundred percent (100%) of the total amount of the Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations including the one (1) year guarantee of all materials and workmanship; and shall indemnify and save harmless the County, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees including reasonable attorney's fees, incurred by the County in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by the County, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the County from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long

as any obligation of Contractor remains. Nothing herein shall limit the County's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the County to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the County's option:

- i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or
- ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder, the Surety and the County, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the County under the Contract and any modification thereto, less any amount previously paid by the County to the Contractor and any other set offs pursuant to the Contract Documents.
- iii. Permit the County to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the County under the Contract and any modification thereto, less any amount previously paid by the County to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the County may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the County, when declaring the Contractor in default, notifies Surety of the County's objection to Contractor's further participation in the completion of the Project.

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

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

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

(Corporate Seal)

Contractor/ Principal

By _____

Title _____

(Corporate Seal)

Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title _____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is \$ _____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of Agent or Representative for service of process in California, if different from above)

(Telephone number of Surety and Agent or Representative for service of process in California)

PART 5 – CONSTRUCTION PLANS

YOLO COUNTY CENTRAL LANDFILL

CONSTRUCTION DRAWINGS

WMU 6H LINER SYSTEM

| | |
|--------------|--------------|
| SHEET NUMBER | TOTAL SHEETS |
| 1 | 13 |



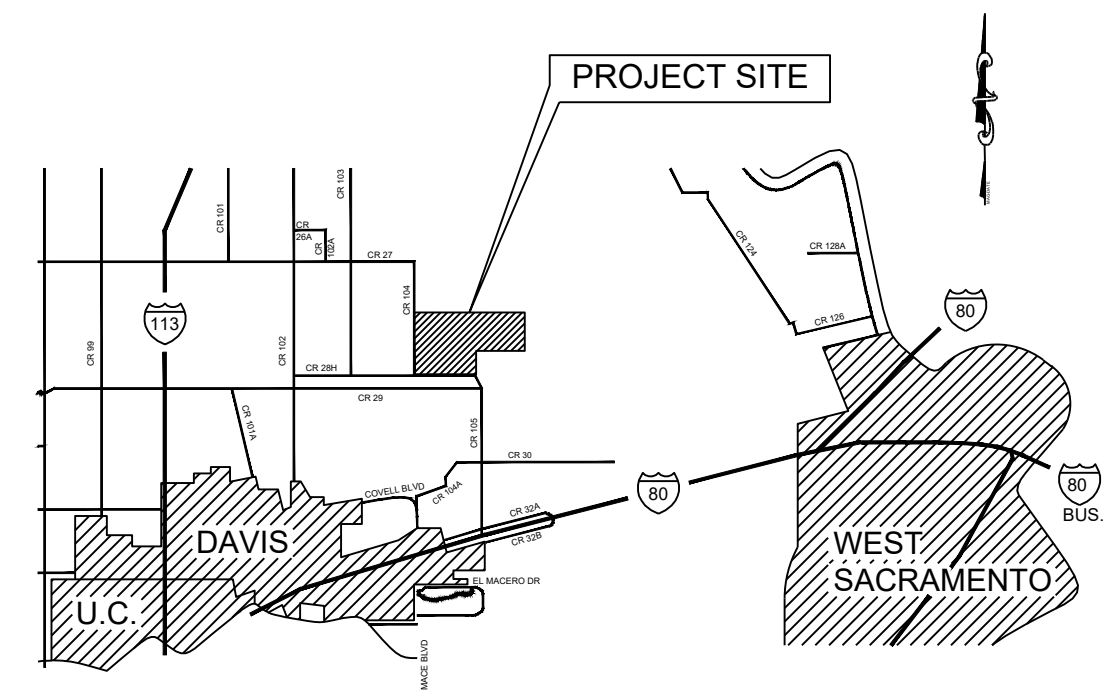
STATE OF CALIFORNIA

BY

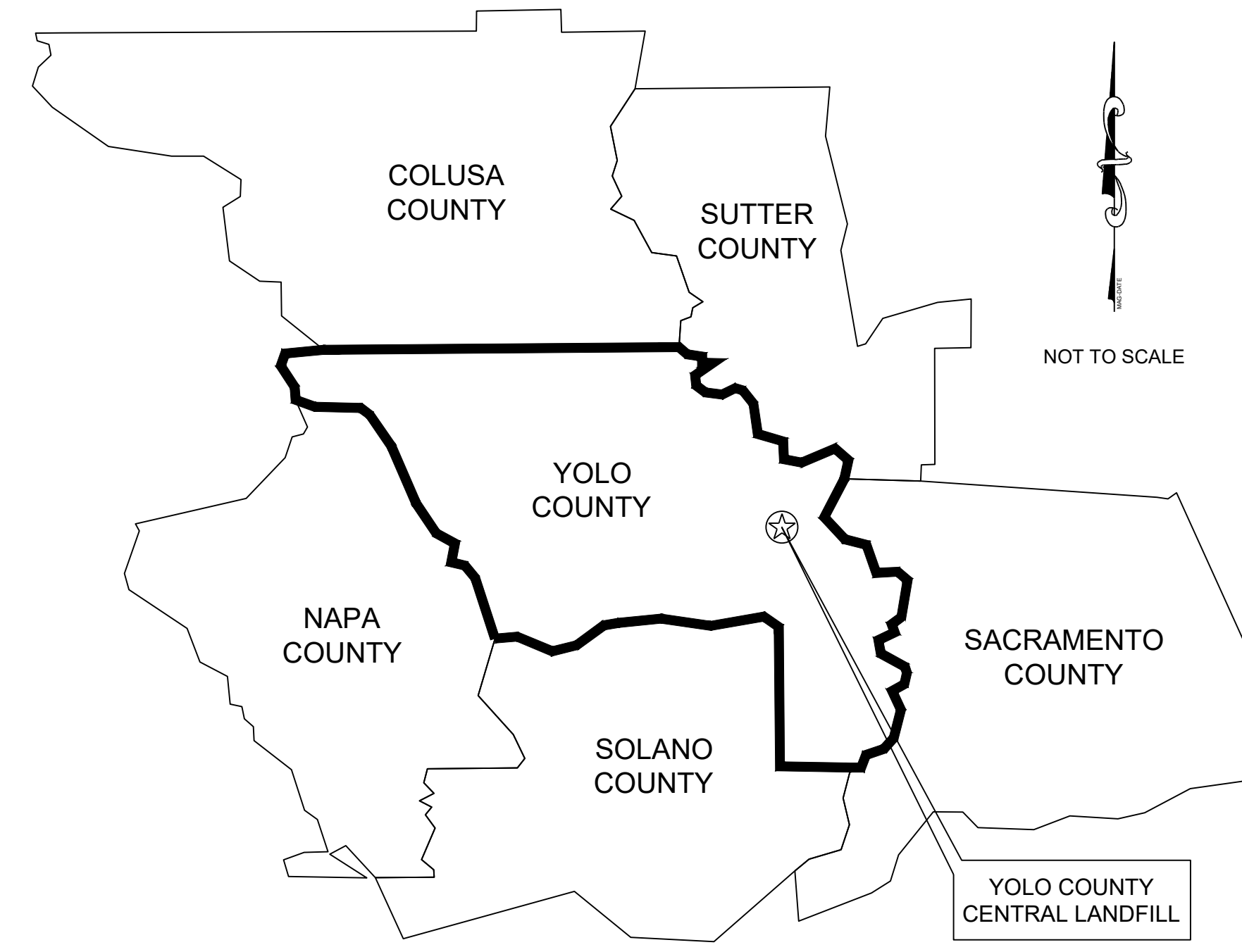


GOLDER
MEMBER OF WSP

SACRAMENTO OFFICE
1000 ENTERPRISE WAY, SUITE 190
ROSEVILLE, CA 95678
(916) 786-2424



VICINITY MAP
NOT TO SCALE



REGIONAL MAP



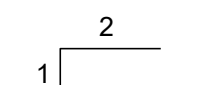
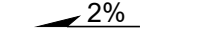
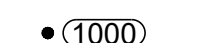
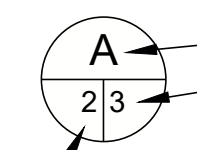
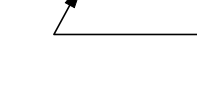

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 1999.50 PER THE YOLO COUNTY SUBSIDENCE NETWORK, BASED LOCALLY UPON GPS OBSERVATIONS TO STATIONS "COY-1" AND "UCD1". THE COORDINATES WERE SCALED BY AN AVERAGE COMBINATION FACTOR OF 1.00004588 TO OBTAIN GROUND COORDINATES AND DISTANCES. COORDINATES ARE EXPRESSED IN U.S. SURVEY FEET.

BASIS OF ELEVATION:

THE ELEVATIONS SHOWN HEREON ARE IN TERMS OF THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE YOLO COUNTY SUBSIDENCE NETWORK, EPOCH 1999.50, BASED LOCALLY UPON GPS OBSERVATIONS TO STATION "COY-1", ELEVATION=28.08'.

DETAIL IDENTIFICATION LEGEND

-  PROPERTY BOUNDARY
-  APPROXIMATE EXISTING MODULE LIMIT
-  SLOPE INDICATOR
-  GRADE INDICATOR
-  SURVEY CONTROL POINT
-  DETAIL/SECTION DESIGNATION
-  DRAWING WHERE SECTION/DETAIL IS LOCATED
-  DRAWING WHERE SECTION/DETAIL IS REFERENCED

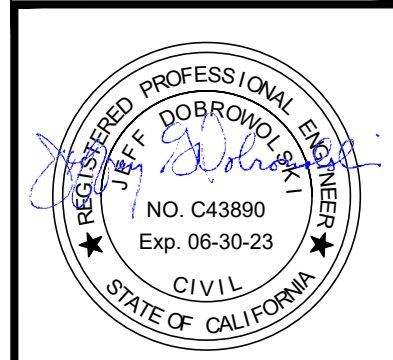
INDEX OF DRAWINGS:

| Sheet Number | Sheet Title |
|--------------|----------------------------------|
| 1 | TITLE SHEET |
| 2 | SITE MAP |
| 3 | SOIL BORROW PLAN |
| 4 | WMU 6H TOP OF LINER GRADING PLAN |
| 5 | CROSS-SECTIONS |
| 6 | DETAILS |
| 7 | DETAILS |
| 8 | DETAILS |
| 9 | DETAILS |
| 10 | DETAILS |
| 11 | DETAILS |
| 12 | TOP OF LINER CONTROL POINTS |
| 13 | BORROW AREA CONTROL POINTS |

GENERAL NOTES:

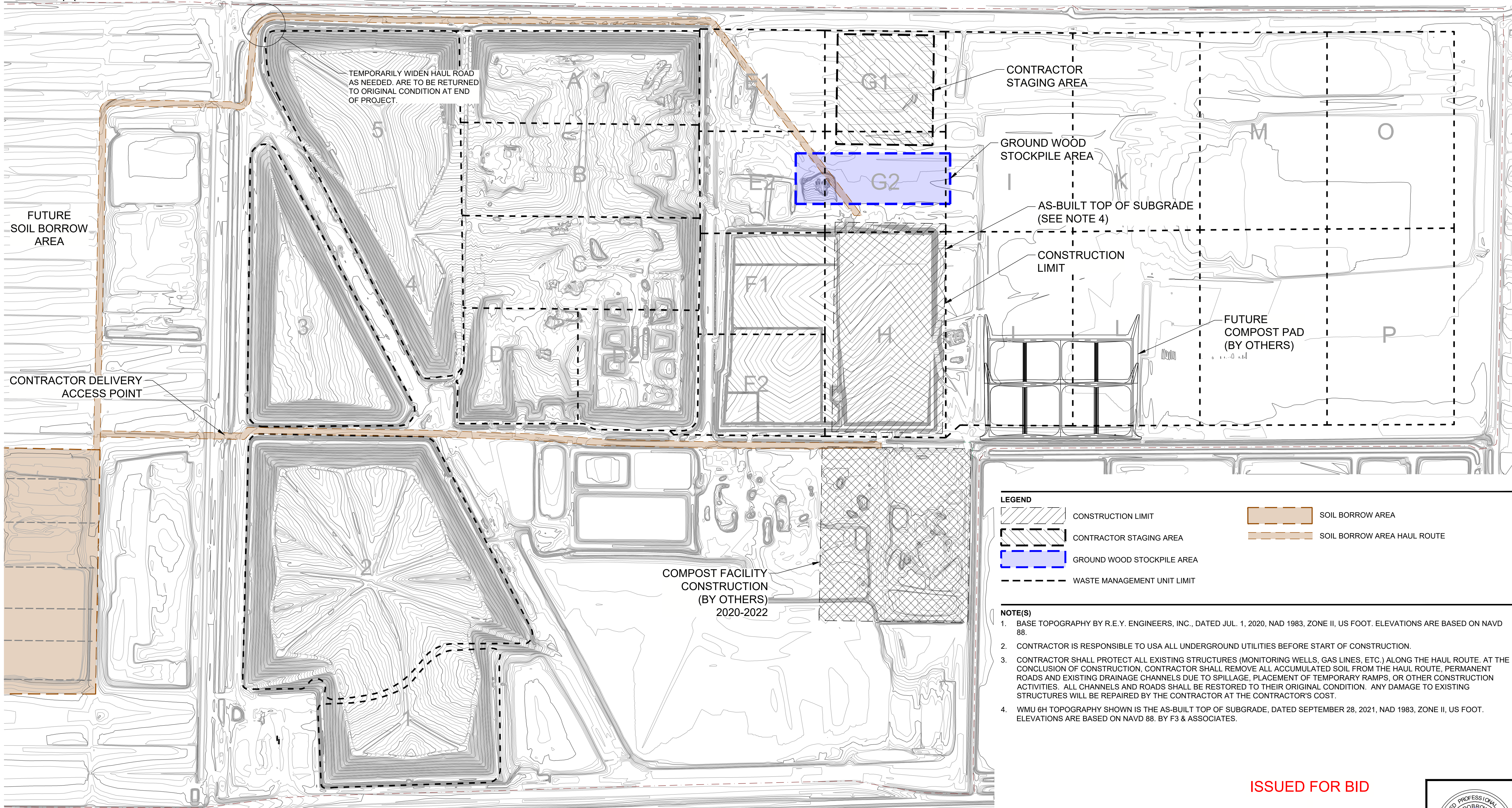
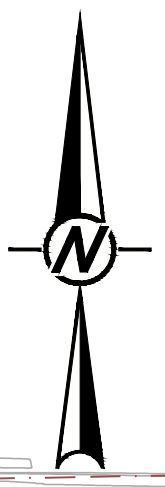
1. CONTRACTOR RESPONSIBLE TO USA ALL UNDERGROUND UTILITIES BEFORE START OF CONSTRUCTION.
2. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES (MONITORING WELLS, GAS LINES, ETC.) ALONG THE HAUL ROUTE. AT THE CONCLUSION OF CONSTRUCTION, CONTRACTOR SHALL REMOVE ALL ACCUMULATED SOIL FROM THE HAUL ROUTE PERMANENT ROADS, AND EXISTING DRAINAGE CHANNELS DUE TO SPILLAGE, PLACEMENT OF TEMPORARY RAMPS, OR OTHER CONSTRUCTION ACTIVITIES. ALL CHANNELS AND ROADS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
3. CONTRACTOR SHALL CLOSE CR104 FROM CR28H TO CR103 DURING CONSTRUCTION USING TYPE III BARRICADES AND DETOUR SIGNS. CLOSURE SHALL BE COORDINATED WITH COUNTY WITH 48 HOUR MINIMUM NOTICE.
4. EXCAVATION IN THE BORROW AREA WILL BE RESTRICTED TO BETWEEN THE HOURS OF 4AM TO 11PM.
5. CONTRACTOR SHALL BE AWARE THAT THERE IS THE POSSIBILITY OF EXPOSING BURIED CULTURAL RESOURCES INCLUDING NATIVE AMERICAN BURIALS. BRIEFINGS WILL BE PROVIDED TO CONTRACTOR'S SUPERVISORY PERSONNEL TO ALERT THEM TO THE NEED TO STOP EXCAVATION AT THE DISCOVERY AND THE PROCEDURES TO FOLLOW REGARDING PROTECTION AND NOTIFICATION OF THE COUNTY AND ARCHAEOLOGIST.
6. THE PROPERTY WEST OF CR104 WAS USED IN THE PAST TO DISPOSE OF TOMATO CANNERY WASTE WATER BY UNDERGROUND SPRINKLER SYSTEM. CONTRACTOR IS RESPONSIBLE FOR REMOVING THAT PART OF THE SYSTEM WHICH ENTERS THE BORROW AREA PRIOR TO BORROWING. THE SYSTEM IS PVC IN THE BORROW AREA. CONTRACTOR WILL ENCOUNTER ASBESTOS CEMENT PIPE AND WILL NEED TO BE DISPOSED OF PROPERLY, NOT AT THE YOLO CENTRAL LANDFILL. CONTRACTOR IS CAUTIONED NOT TO RUN HEAVY EQUIPMENT OUTSIDE THE BORROW AREA TO AVOID DAMAGING THE REMAINING PART OF THE SYSTEM.
7. CONTRACTORS ARE ADVISED THAT GROUNDWATER ELEVATIONS MAY NOT ALLOW EXCAVATION TO FINAL DEPTHS SHOWN ON PLANS.

ISSUED FOR BID



| | | | | | |
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| REVISIONS | | | | | |
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| MAL | MAL | JGD | | | |
| YOLO COUNTY DEPARTMENT OF COMMUNITY SERVICES DIVISION OF INTEGRATED WASTE MANAGEMENT 44090 County Road 28H, Woodland, CA 95776-9101 DIRECTOR APPROVED: 2021 P.E. NUMBER C44810 | | | | | |
| YOLO COUNTY CENTRAL LANDFILL WMU 6H LINER SYSTEM TITLE SHEET | | | | | |
| | | | | | SHEET NUMBER |
| | | | | | 1 |

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LEGEND

| | | | |
|--|-----------------------------|--|-----------------------------|
| | CONSTRUCTION LIMIT | | SOIL BORROW AREA |
| | CONTRACTOR STAGING AREA | | SOIL BORROW AREA HAUL ROUTE |
| | GROUND WOOD STOCKPILE AREA | | |
| | WASTE MANAGEMENT UNIT LIMIT | | |

- NOTE(S)**
1. BASE TOPOGRAPHY BY R.E.Y. ENGINEERS, INC., DATED JUL. 1, 2020, NAD 1983, ZONE II, US FOOT. ELEVATIONS ARE BASED ON NAVD 88.
 2. CONTRACTOR IS RESPONSIBLE TO USE ALL UNDERGROUND UTILITIES BEFORE START OF CONSTRUCTION.
 3. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES (MONITORING WELLS, GAS LINES, ETC.) ALONG THE HAUL ROUTE. AT THE CONCLUSION OF CONSTRUCTION, CONTRACTOR SHALL REMOVE ALL ACCUMULATED SOIL FROM THE HAUL ROUTE, PERMANENT ROADS AND EXISTING DRAINAGE CHANNELS DUE TO SPILLAGE, PLACEMENT OF TEMPORARY RAMPS, OR OTHER CONSTRUCTION ACTIVITIES. ALL CHANNELS AND ROADS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. ANY DAMAGE TO EXISTING STRUCTURES WILL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S COST.
 4. WMU 6H TOPOGRAPHY SHOWN IS THE AS-BUILT TOP OF SUBGRADE, DATED SEPTEMBER 28, 2021, NAD 1983, ZONE II, US FOOT. ELEVATIONS ARE BASED ON NAVD 88. BY F3 & ASSOCIATES.

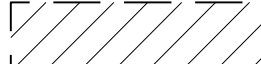





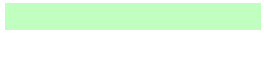
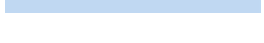
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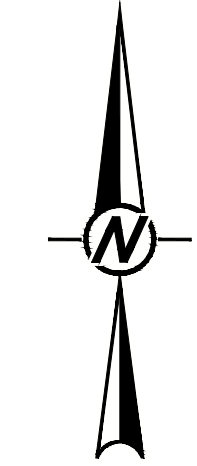


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| YOLO COUNTY DEPARTMENT OF COMMUNITY SERVICES DIVISION OF INTEGRATED WASTE MANAGEMENT 44080 County Road 28H, Woodland, CA 95776-9101 | | | | | |
| DIRECTOR APPROVED _____ 2021 P.E. NUMBER C44510 | | | | | |
| YOLO COUNTY CENTRAL LANDFILL WMU 6H LINER SYSTEM SITE MAP | | | | | |
| SHEET NUMBER 2 | | | | | |

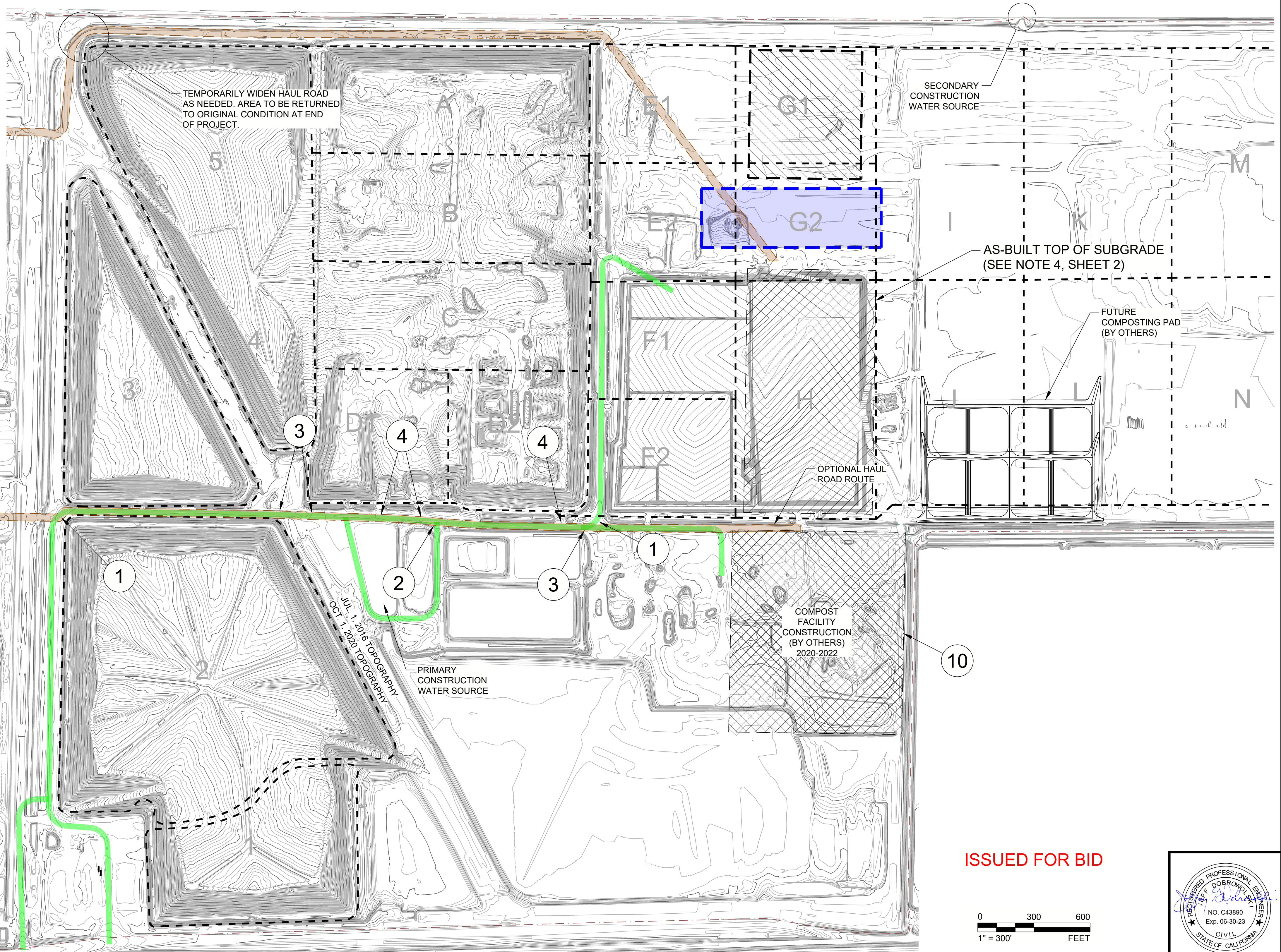
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LEGEND

-  CONSTRUCTION LIMIT
-  CONTRACTOR STAGING AREA
-  GROUND WOOD STOCKPILE AREA
-  WASTE MANAGEMENT UNIT LIMIT
-  SOIL BORROW AREA
-  SOIL BORROW AREA HAUL ROUTE
-  LANDFILL CUSTOMER ACCESS ROUTE
-  ALTERNATE SAND AND GRAVEL DELIVERY ROUTE



- NOTE(S)**
1. MAJOR INTERSECTION WITH LANDFILL CUSTOMER TRAFFIC. THE LANDFILL IS OPEN TO CUSTOMERS BETWEEN 6:30 AM AND 4 PM MONDAY THROUGH SATURDAY AND 8 AM TO 4PM ON SUNDAY. TYPICALLY THE LANDFILL RECEIVES BETWEEN 350 AND 600 CUSTOMERS PER DAY. MOST CUSTOMERS HAVE EXITED THE LANDFILL BY APPROXIMATELY 4:30 PM. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH SPECIFICATION SECTION 11-13. CONTRACTORS ATTENTION IS DIRECTED TO NOTE 9 REGARDING HOURS OF EXCAVATION WHEN CONFLICTS WITH LANDFILL TRAFFIC MAY BE AVOIDED.
 2. INTERSECTION WITH LANDFILL LIQUID WASTE CUSTOMERS. TYPICALLY THE LANDFILL RECEIVES APPROXIMATELY 20 LARGE COMMERCIAL LIQUID WASTE CUSTOMERS PER DAY.
 3. INTERSECTIONS FOR OTHER COUNTY OR CONTRACTOR ACCESS. TYPICALLY 5 VEHICLES PER DAY.
 4. SPEED HUMPS. AT CONTRACTOR'S OPTION THEY MAY BE REMOVED FOR THE DURATION OF THE PROJECT BUT MUST BE REPLACED IN ACCORDANCE WITH CITY OF SACRAMENTO STANDARD DETAIL T-221 AT CONCLUSION OF THE PROJECT AT CONTRACTOR'S EXPENSE.
 5. COUNTY ROAD (CR) 104 WILL BE CLOSED TO PUBLIC TRAFFIC.
 6. CONTRACTOR SHALL BE AWARE THAT THERE IS THE POSSIBILITY OF EXPOSING BURIED CULTURAL RESOURCES INCLUDING NATIVE AMERICAN BURIALS. BRIEFINGS WILL BE PROVIDED TO CONTRACTOR'S SUPERVISORY PERSONNEL TO ALERT THEM TO THE NEED TO STOP EXCAVATION AT THE DISCOVERY AND THE PROCEDURES TO FOLLOW REGARDING PROTECTION AND NOTIFICATION OF THE COUNTY AND ARCHAEOLOGIST.
 7. THE PROPERTY WEST OF CR104 WAS USED IN THE PAST TO DISPOSE OF TOMATO CANNERY WASTE WATER BY AN UNDERGROUND SPRINKLER SYSTEM. CONTRACTOR IS RESPONSIBLE FOR REMOVING THAT PART OF THE SYSTEM WHICH ENTERS THE SOIL BORROW AREA PRIOR TO BORROWING. THE SYSTEM CONSISTS OF 3-INCH DIAMETER PVC LATERALS WITH ASBESTOS CEMENT COUPLERS AND AN 8-INCH DIAMETER ASBESTOS CEMENT TRUNK LINE. THERE ARE ALSO SEVERAL CONDUITS WITH WIRE AND TUBES. CONTRACTOR IS RESPONSIBLE FOR PROPER REMOVAL AND DISPOSAL AT A PERMITTED FACILITY. THE YOLO COUNTY CENTRAL LANDFILL IS NOT A PERMITTED FACILITY.
 8. EXCAVATION IN THE SOIL BORROW AREA WILL BE RESTRICTED TO BETWEEN THE HOURS OF 4AM TO 11 PM.
 9. CONTRACTORS ARE ADVISED THAT GROUNDWATER ELEVATIONS MAY NOT ALLOW EXCAVATION TO FINAL DEPTHS SHOWN ON PLANS.
 10. ONGOING CONSTRUCTION ACTIVITIES ASSOCIATED WITH COMPOST FACILITY, CONTRACTOR TO NOT INTERFERE.



| REVISIONS | DATE | BY | ISSUED FOR BID |
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DESIGN BY: MAL 10/29/21
 DRAWN BY: MAL 10/29/21
 CHECK BY: JGD 10/29/21

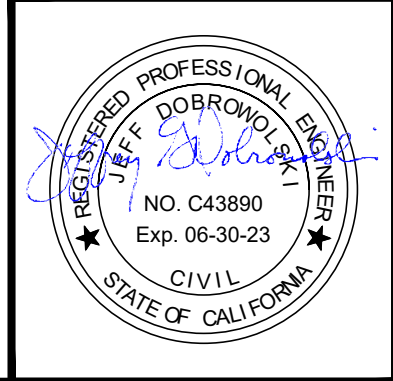
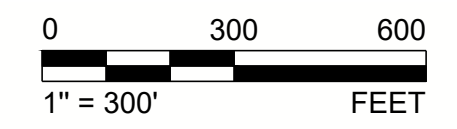
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YOLO COUNTY
 DEPARTMENT OF COMMUNITY SERVICES
 DIVISION OF INTEGRATED WASTE MANAGEMENT
 44090 County Road 28H, Woodland, CA 95776-9101

DIRECTOR: MARCH 14, 2019, P.E. NUMBER: C44810

YOLO COUNTY CENTRAL LANDFILL
 WMU 6H LINER SYSTEM
 SOIL BORROW PLAN

ISSUED FOR BID

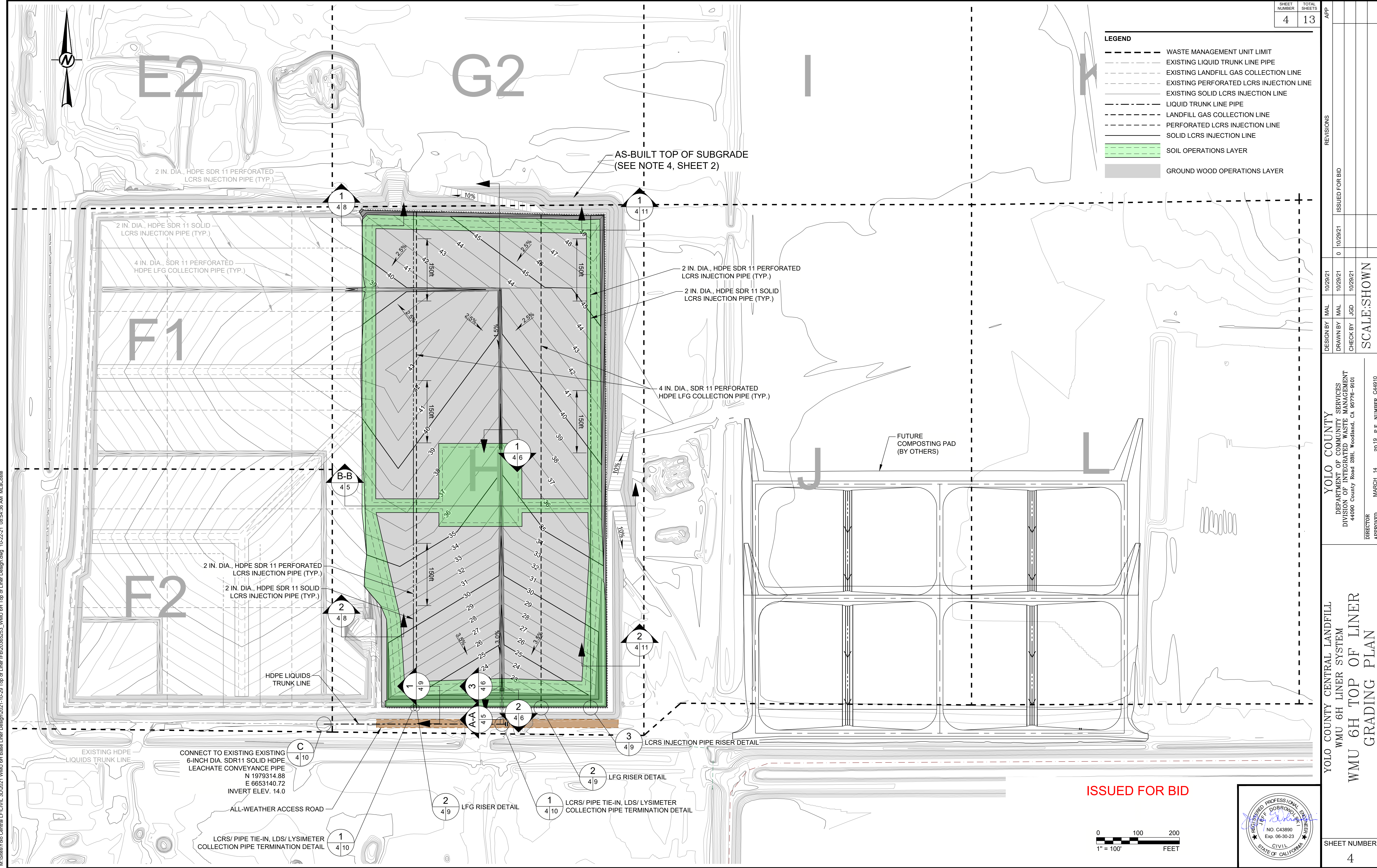


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| JGD | 10/29/21 | | |

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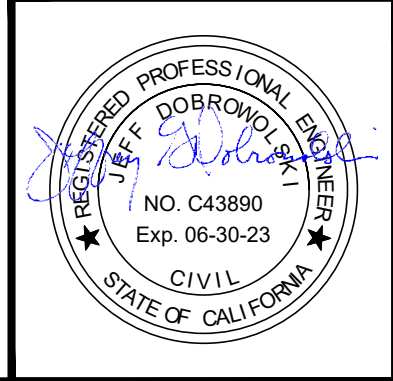
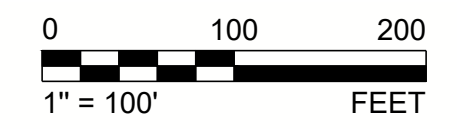
- WASTE MANAGEMENT UNIT LIMIT
- EXISTING LIQUID TRUNK LINE PIPE
- EXISTING LANDFILL GAS COLLECTION LINE
- EXISTING PERFORATED LCRS INJECTION LINE
- EXISTING SOLID LCRS INJECTION LINE
- LIQUID TRUNK LINE PIPE
- LANDFILL GAS COLLECTION LINE
- PERFORATED LCRS INJECTION LINE
- SOLID LCRS INJECTION LINE
- SOIL OPERATIONS LAYER
- GROUND WOOD OPERATIONS LAYER



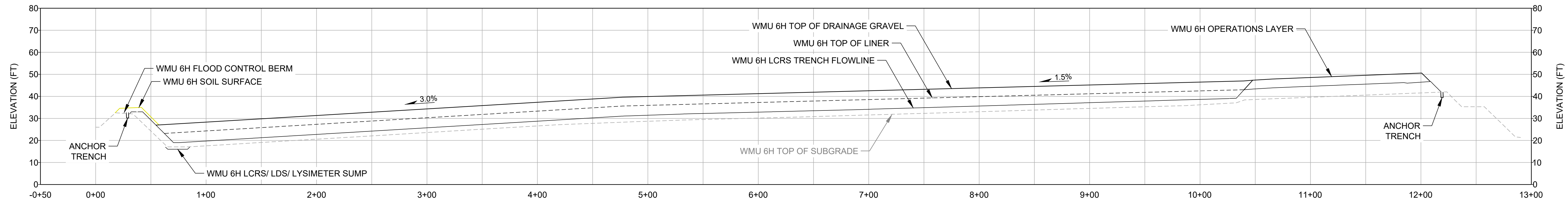
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 DEPARTMENT OF COMMUNITY SERVICES
 DIVISION OF INTEGRATED WASTE MANAGEMENT
 44090 County Road 28th, Woodland, CA 95776-9101
 DIRECTOR APPROVED MARCH 14, 2019 P.E. NUMBER C44810

YOLO COUNTY CENTRAL LANDFILL
 WMU 6H LINER SYSTEM
 WMU 6H TOP OF LINER
 GRADING PLAN

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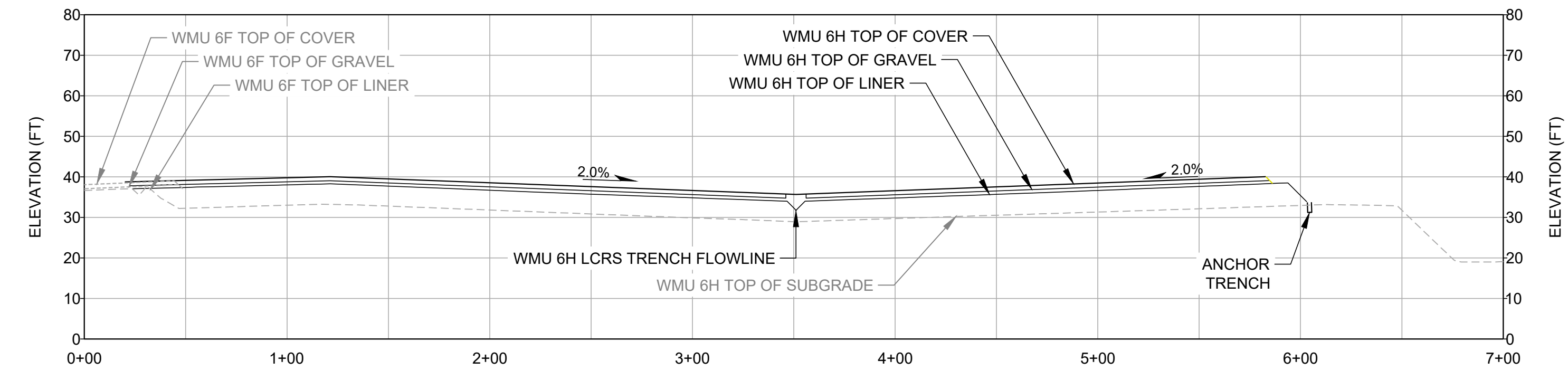


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HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=25'

A
SECTION A-A'



HORIZ. SCALE: 1"=50'
VERT. SCALE: 1"=25'

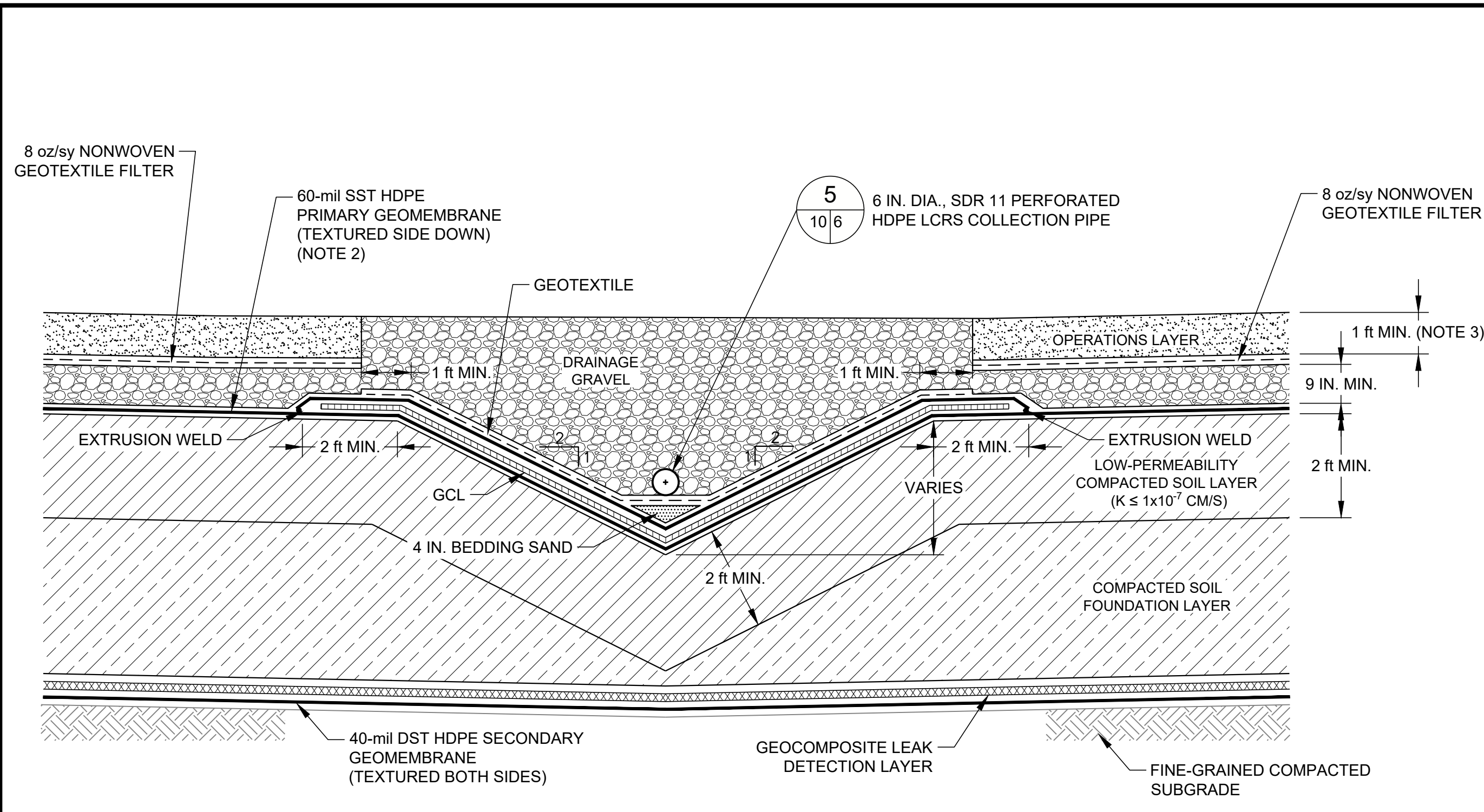
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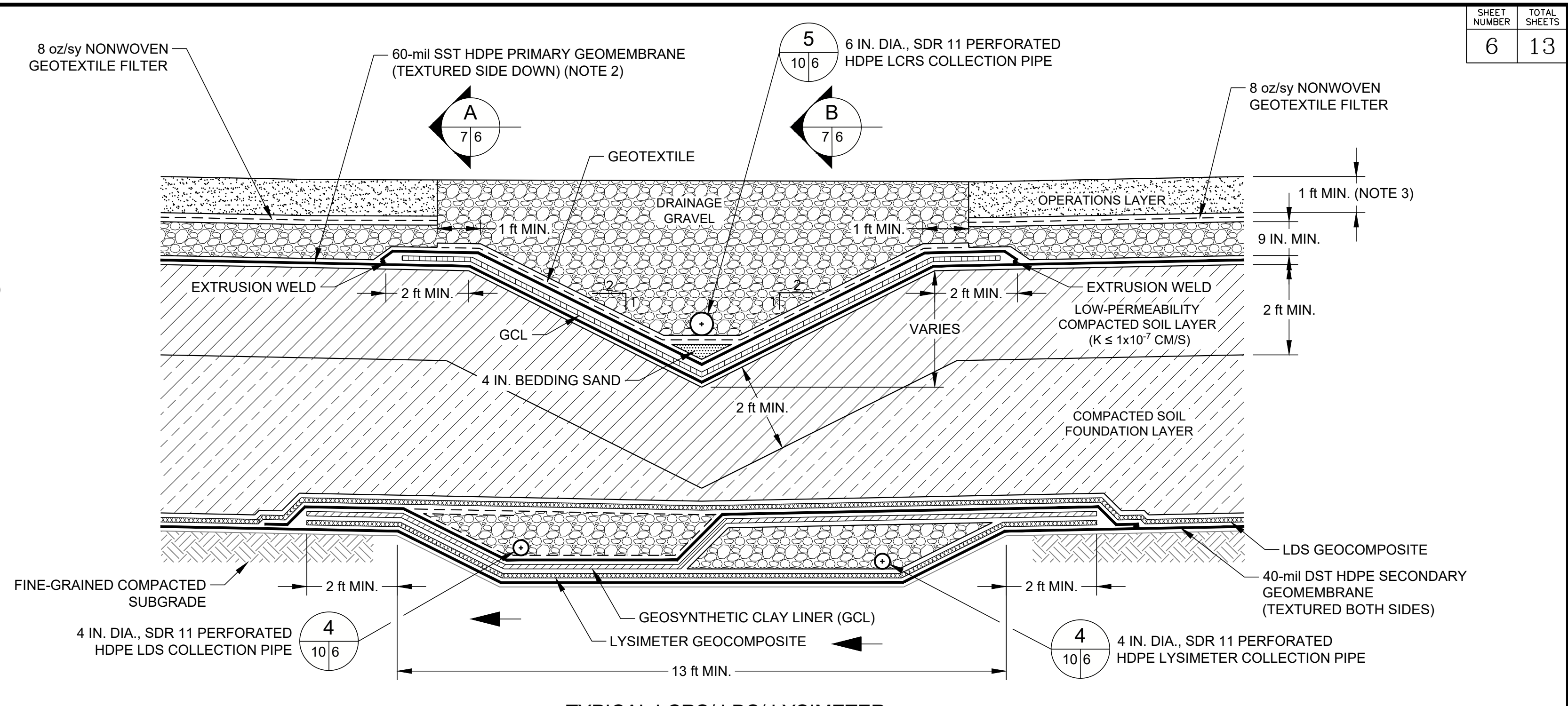


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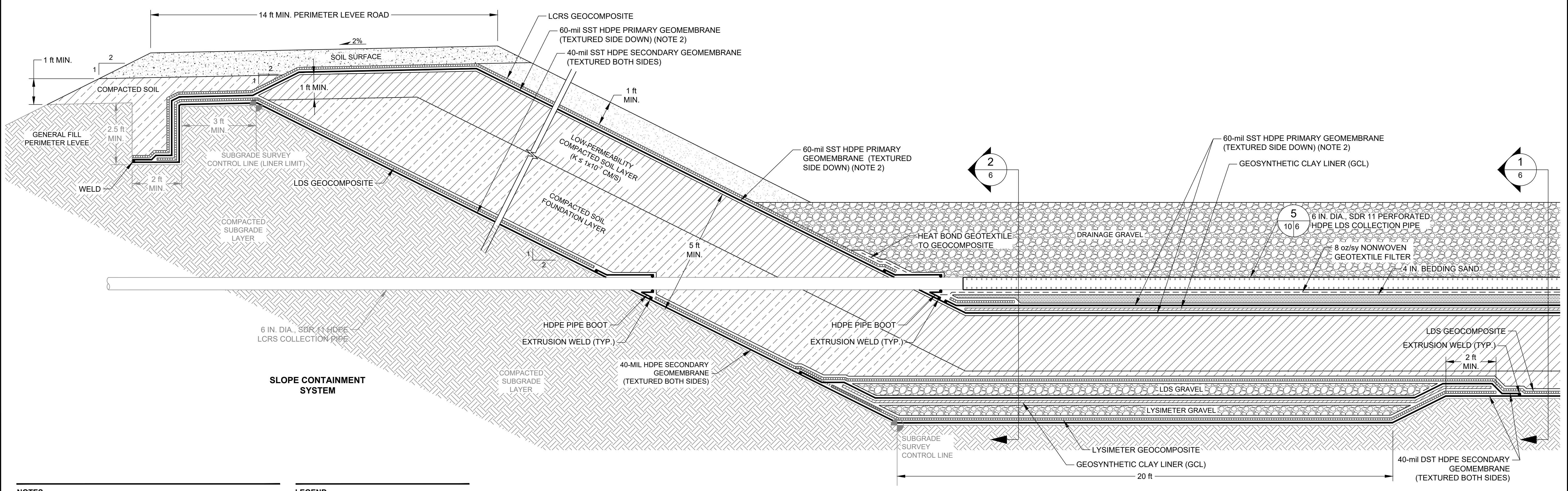
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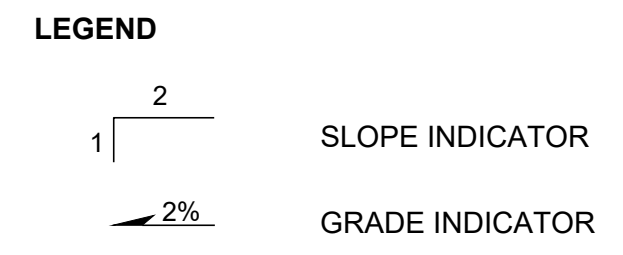


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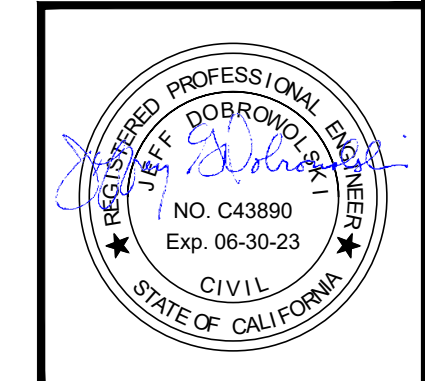
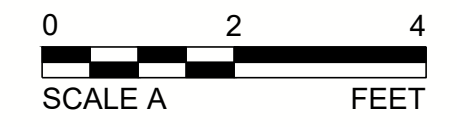


SCALE A 3 LCRS COLLECTION PIPE SECTION

- NOTES**
1. GEOSYNTHETICS EXAGGERATED FOR CLARITY.
 2. AS AN ALTERNATIVE TO SINGLE-SIDED TEXTURE, THE PRIMARY GEOMEMBRANE MAY BE TEXTURED ON BOTH SIDES.
 3. SOIL OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 1-FOOT. GROUND WOOD OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 2-FEET.



ISSUED FOR BID



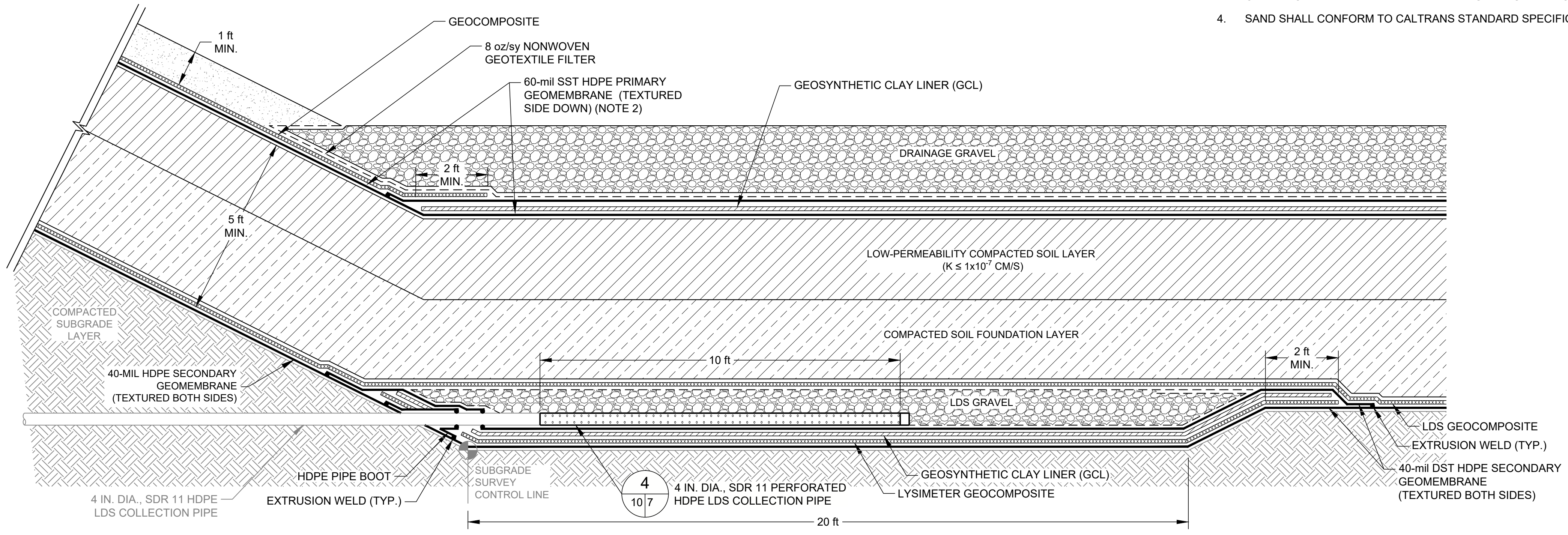
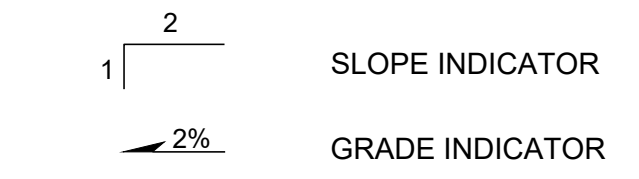
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| YOLO COUNTY CENTRAL LANDFILL | | | DIVISION OF INTEGRATED WASTE MANAGEMENT | |
| WMU 6H LINER SYSTEM | | | 44090 County Road 28H, Woodland, CA 95776-9101 | |
| DETAILS | | | DIRECTOR APPROVED | |
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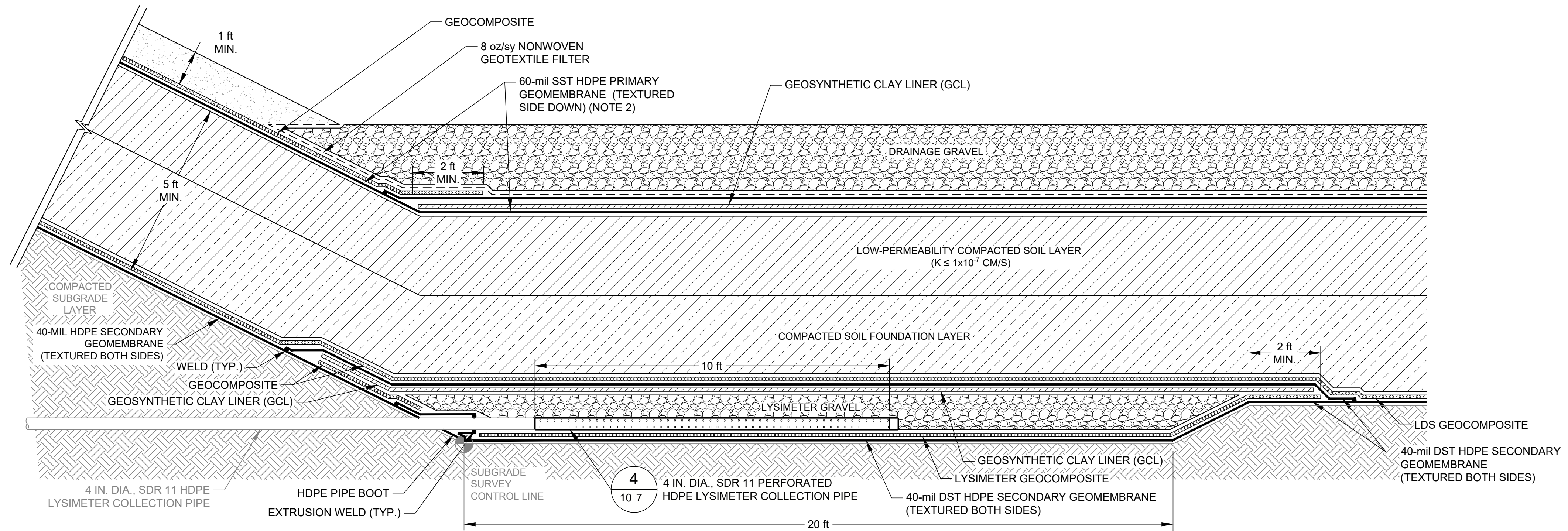
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2. AS AN ALTERNATIVE TO SINGLE-SIDED TEXTURE, THE PRIMARY GEOMEMBRANE MAY BE TEXTURED ON BOTH SIDES.
3. SOIL OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 1-FOOT. GROUND WOOD OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 2-FEET.
4. SAND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATIONS SECTION 19-3.025B.

LEGEND

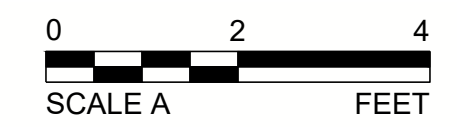


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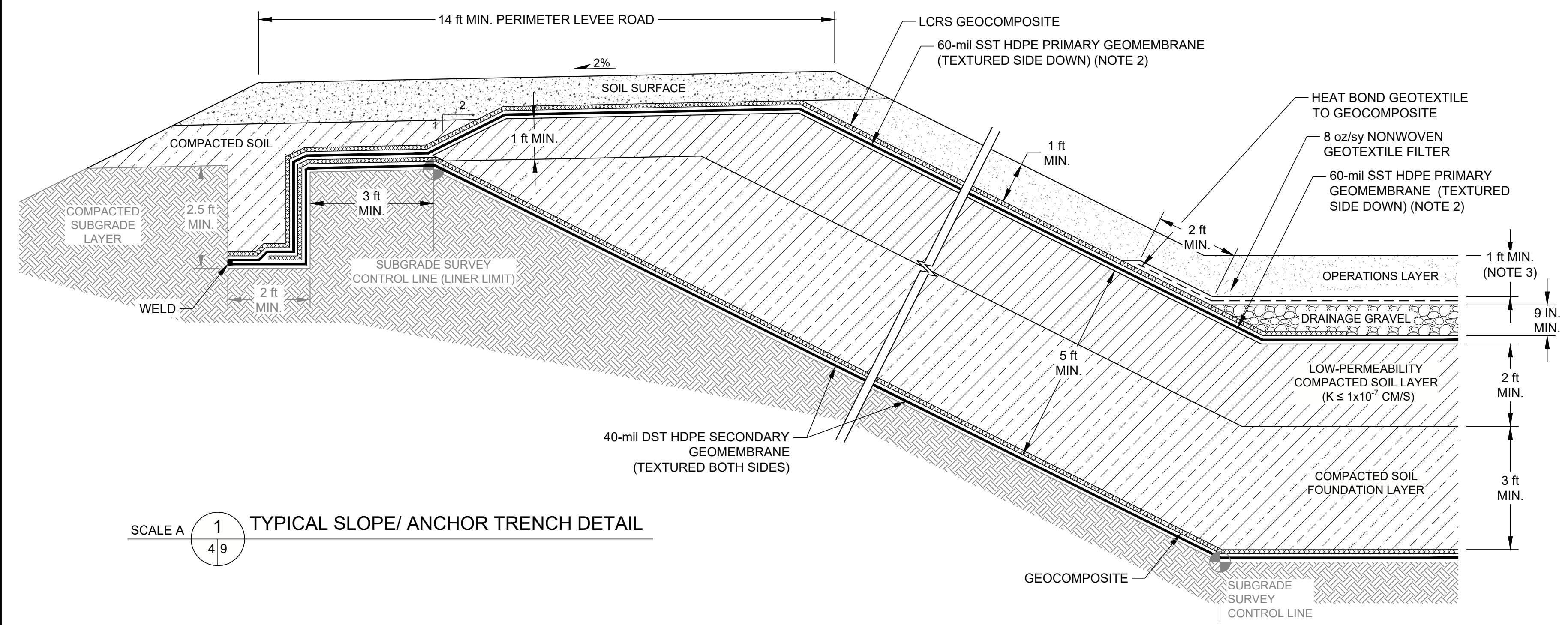
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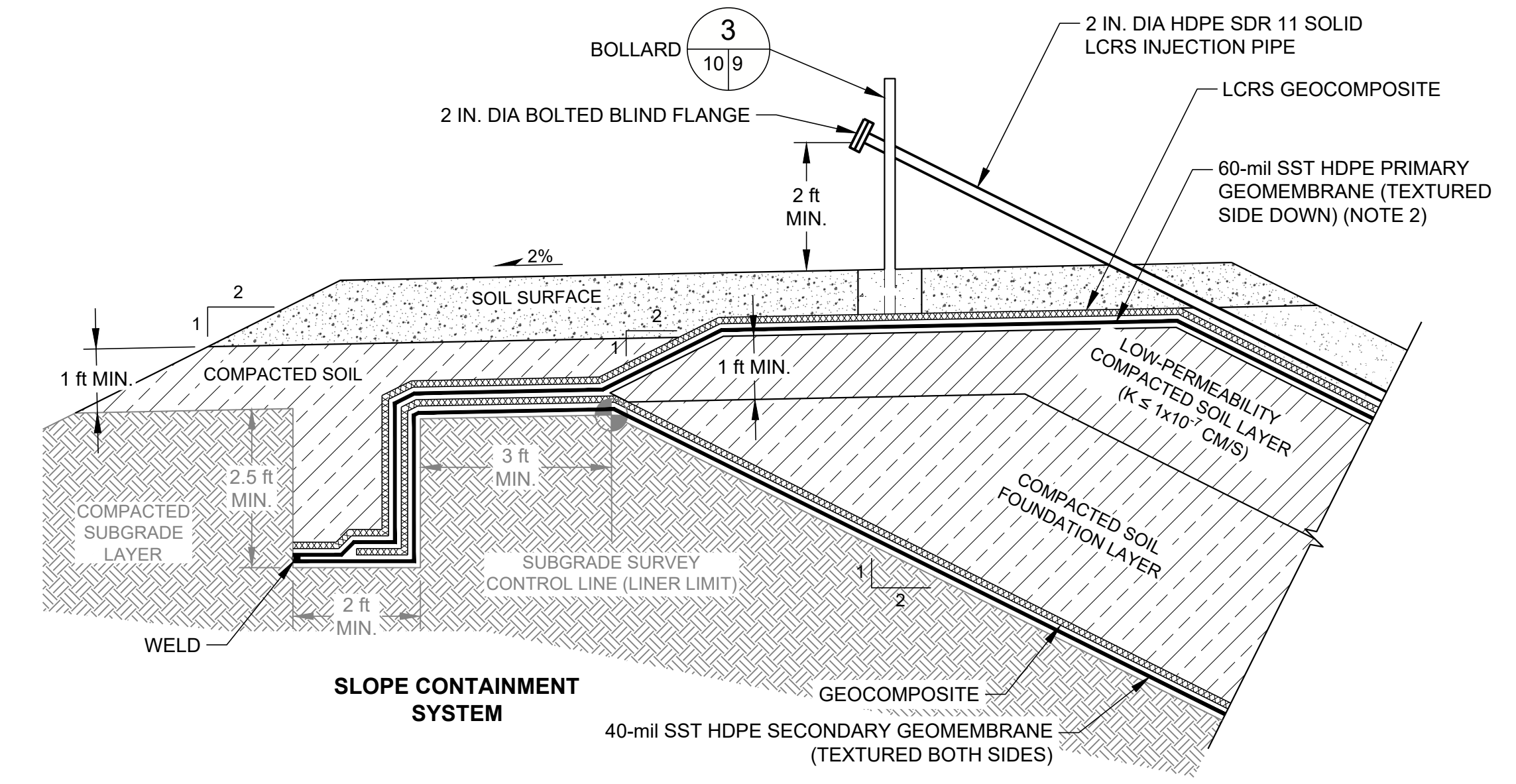


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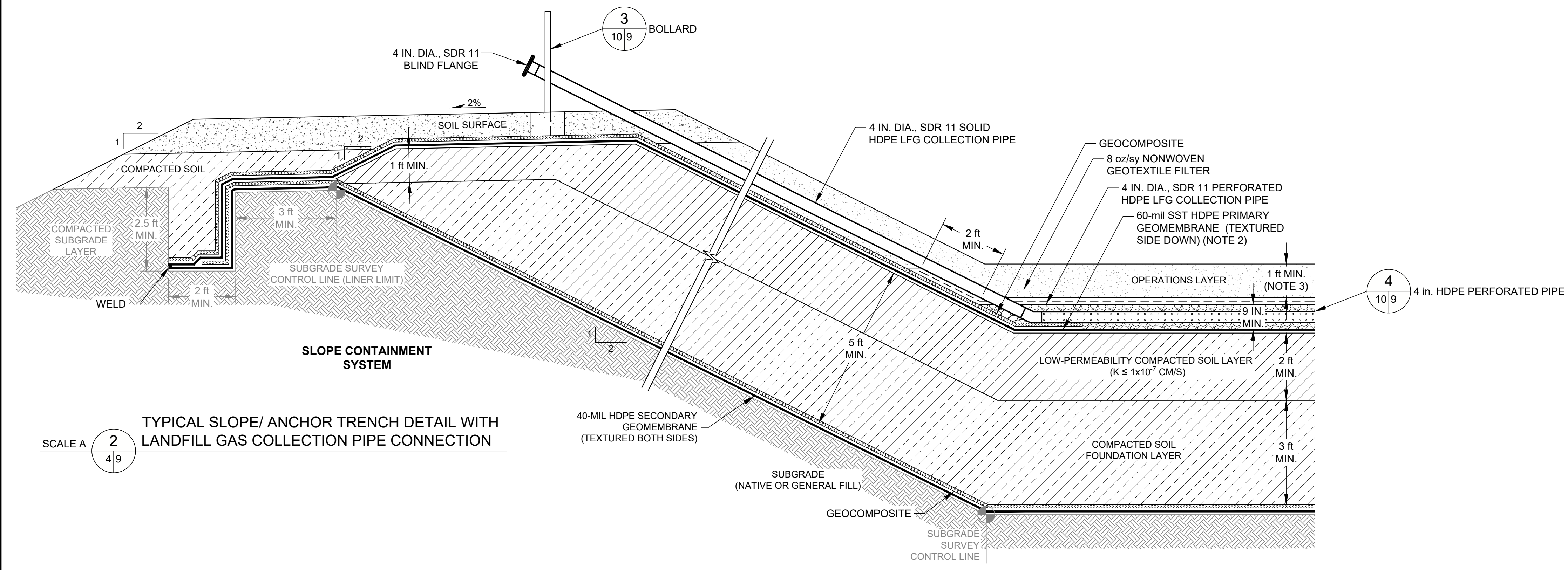
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SCALE A 1/49 TYPICAL SLOPE/ ANCHOR TRENCH DETAIL

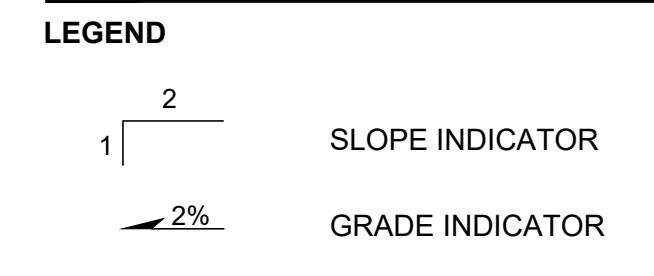


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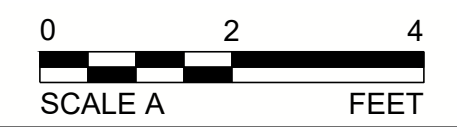


SCALE A 2/49 TYPICAL SLOPE/ ANCHOR TRENCH DETAIL WITH LANDFILL GAS COLLECTION PIPE CONNECTION

- NOTES**
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 2. AS AN ALTERNATIVE TO SINGLE-SIDED TEXTURE, THE PRIMARY GEOMEMBRANE MAY BE TEXTURED ON BOTH SIDES.
 3. SOIL OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 1-FOOT. GROUND WOOD OPERATIONS LAYER SHALL HAVE A MINIMUM THICKNESS OF 2-FEET.



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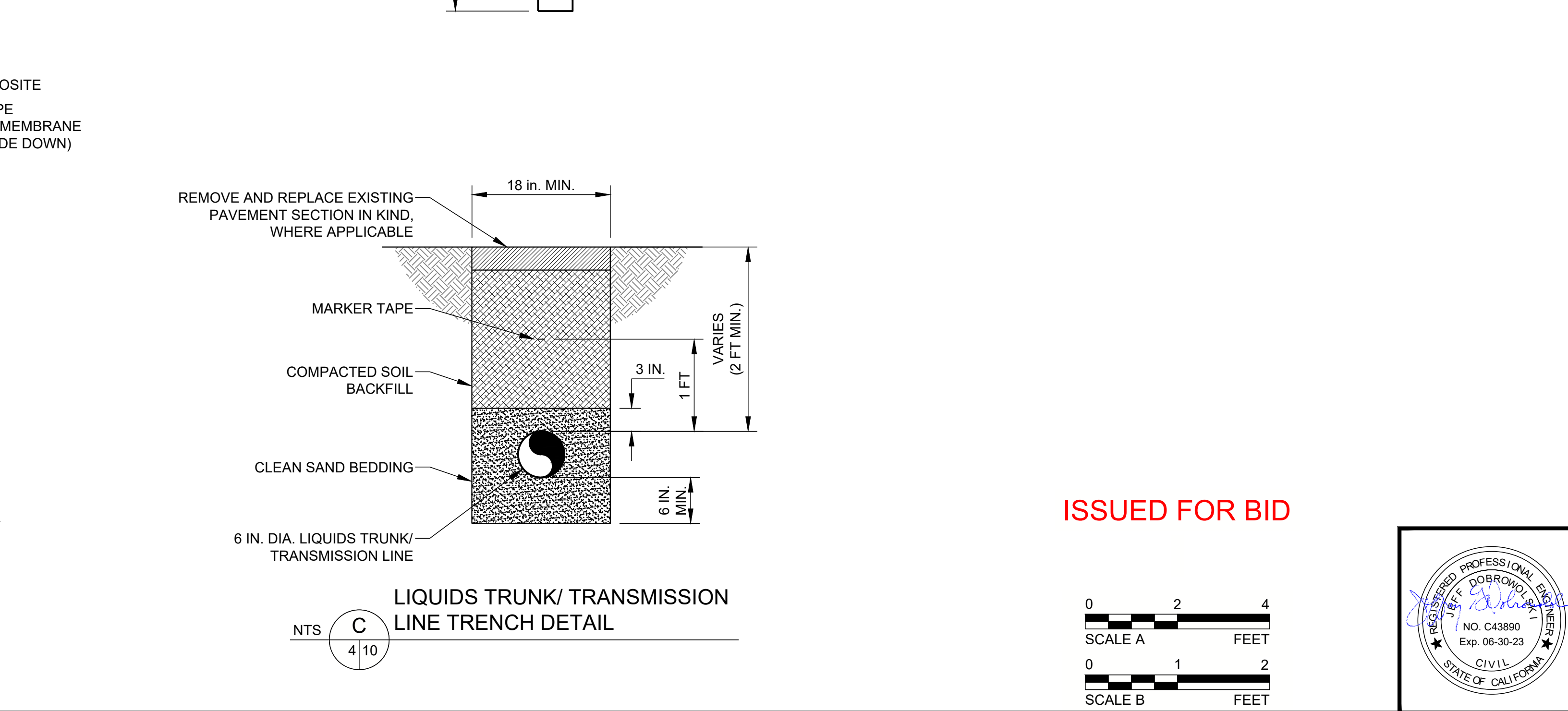
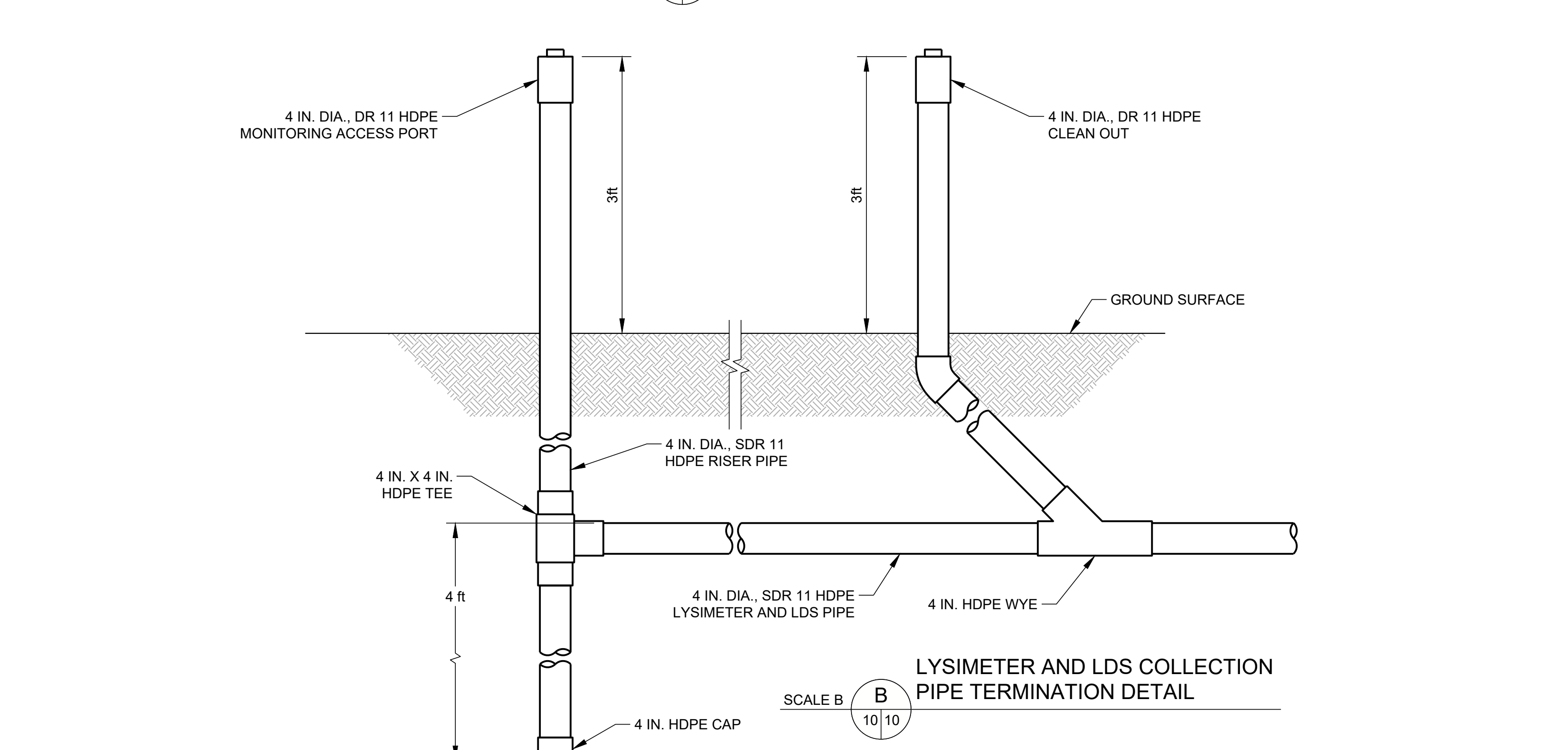
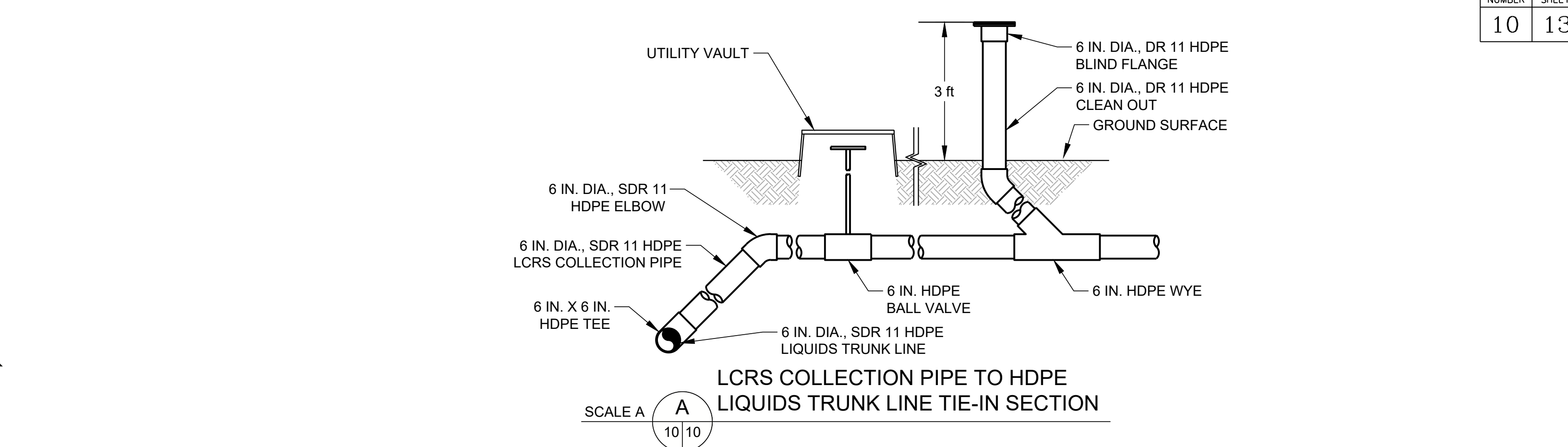
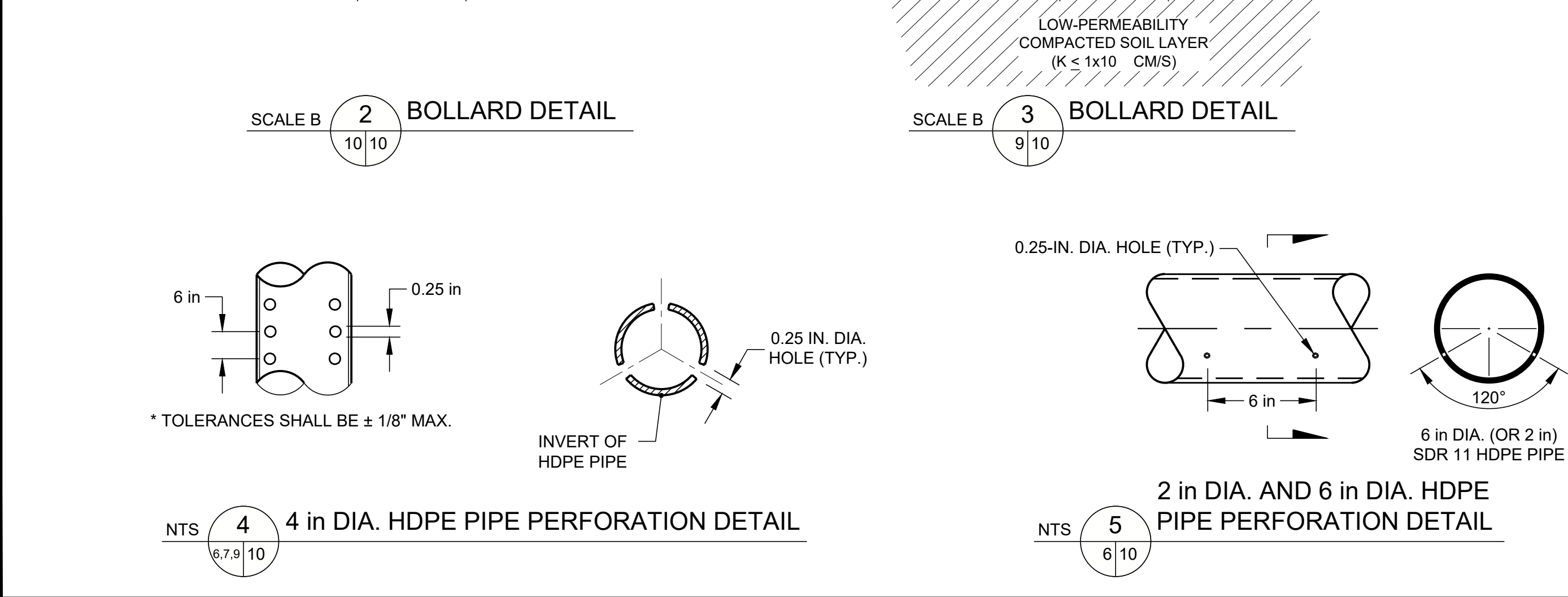
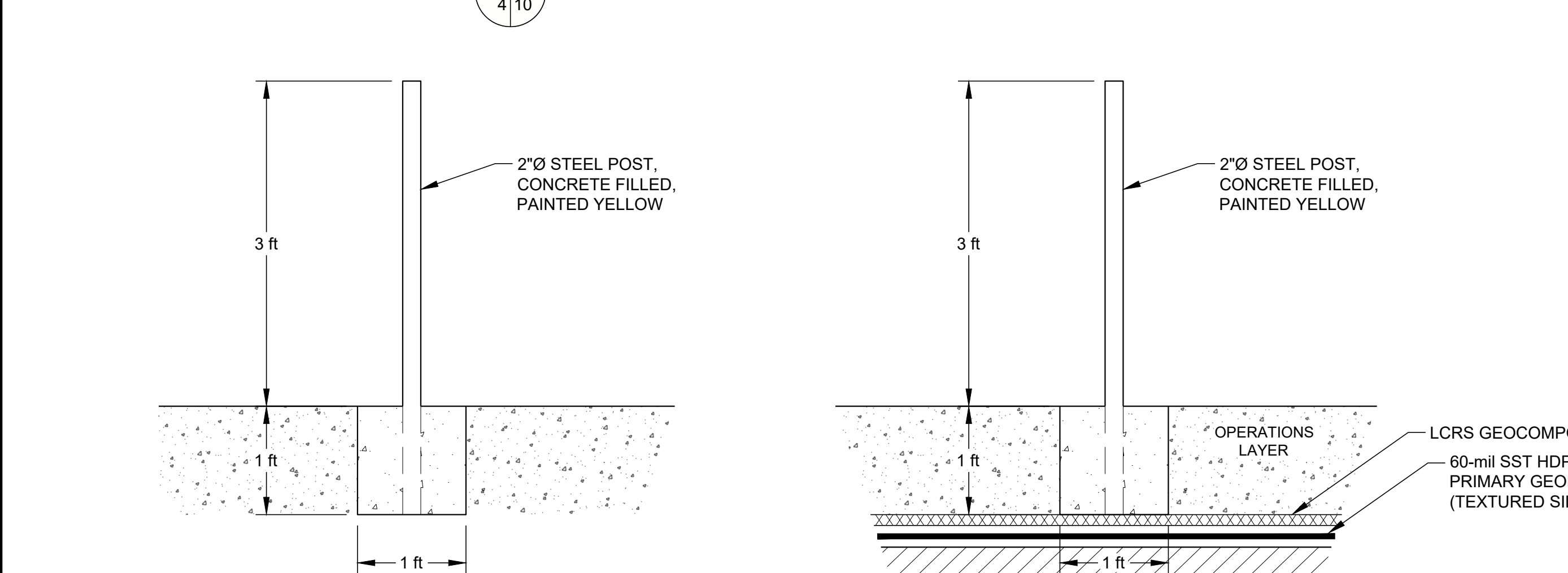
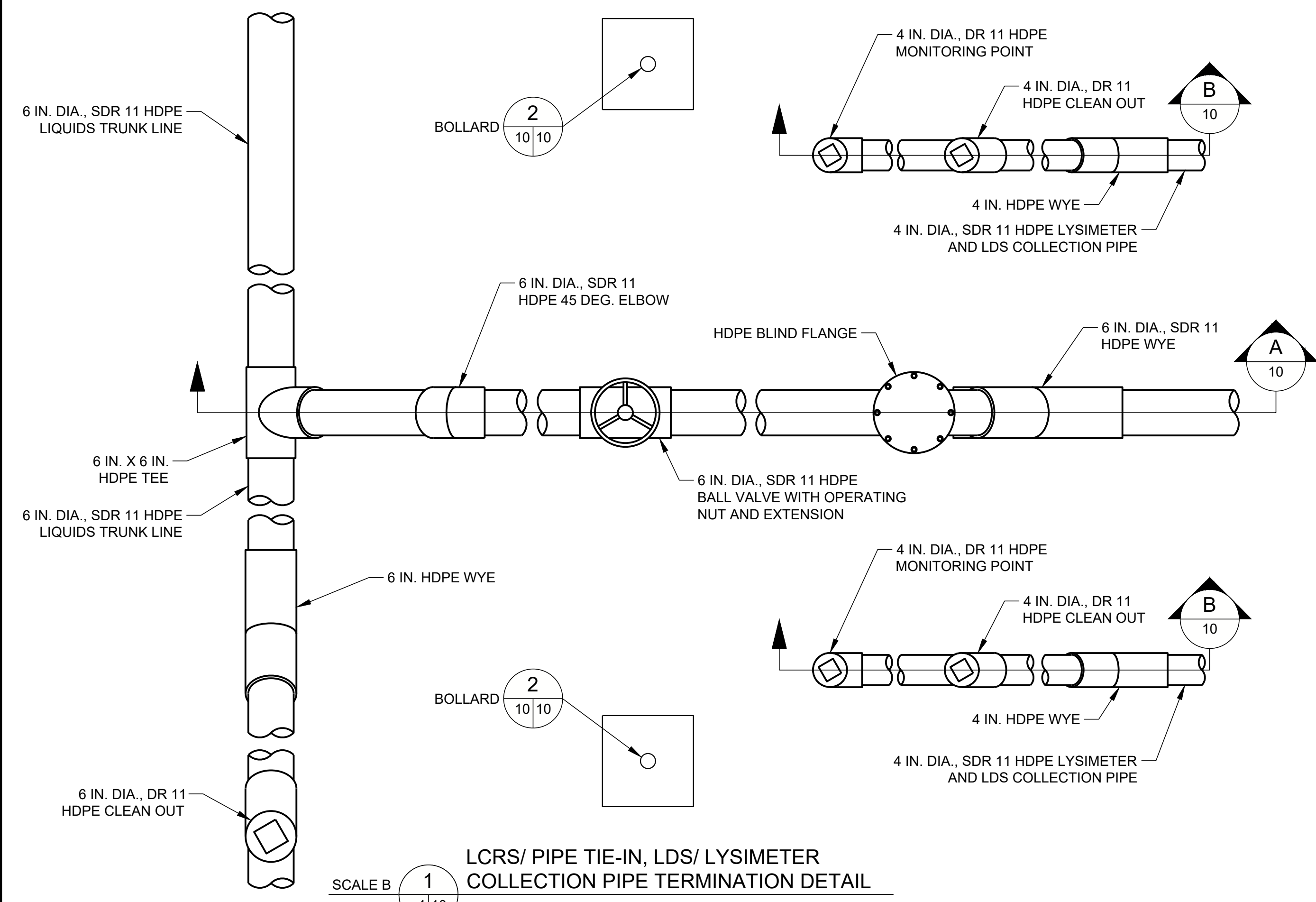


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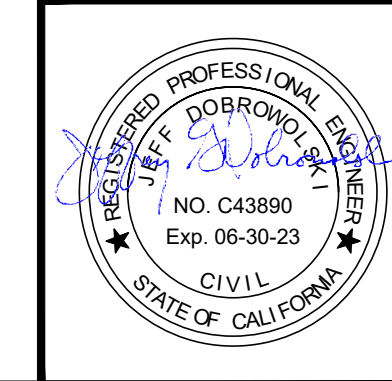
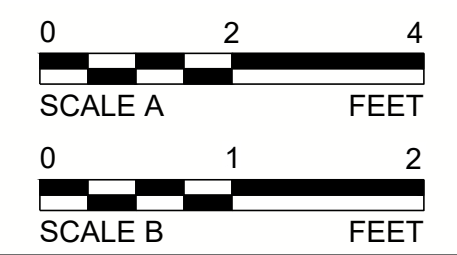
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 44090 County Road 28H, Woodland, CA 95776-9101
 DIRECTOR APPROVED

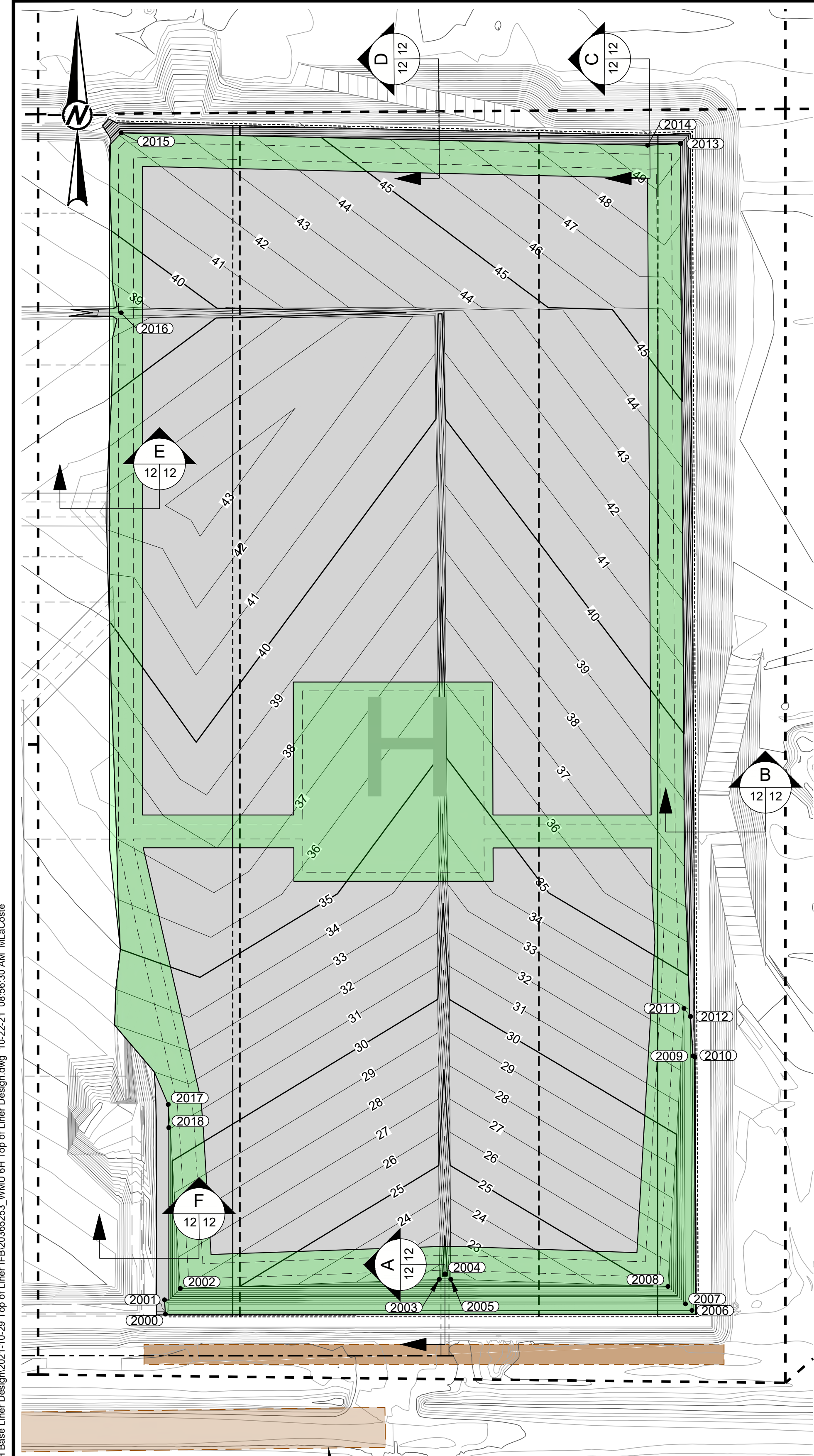
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 WMU 6H LINER SYSTEM
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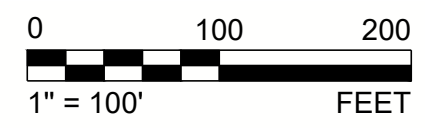
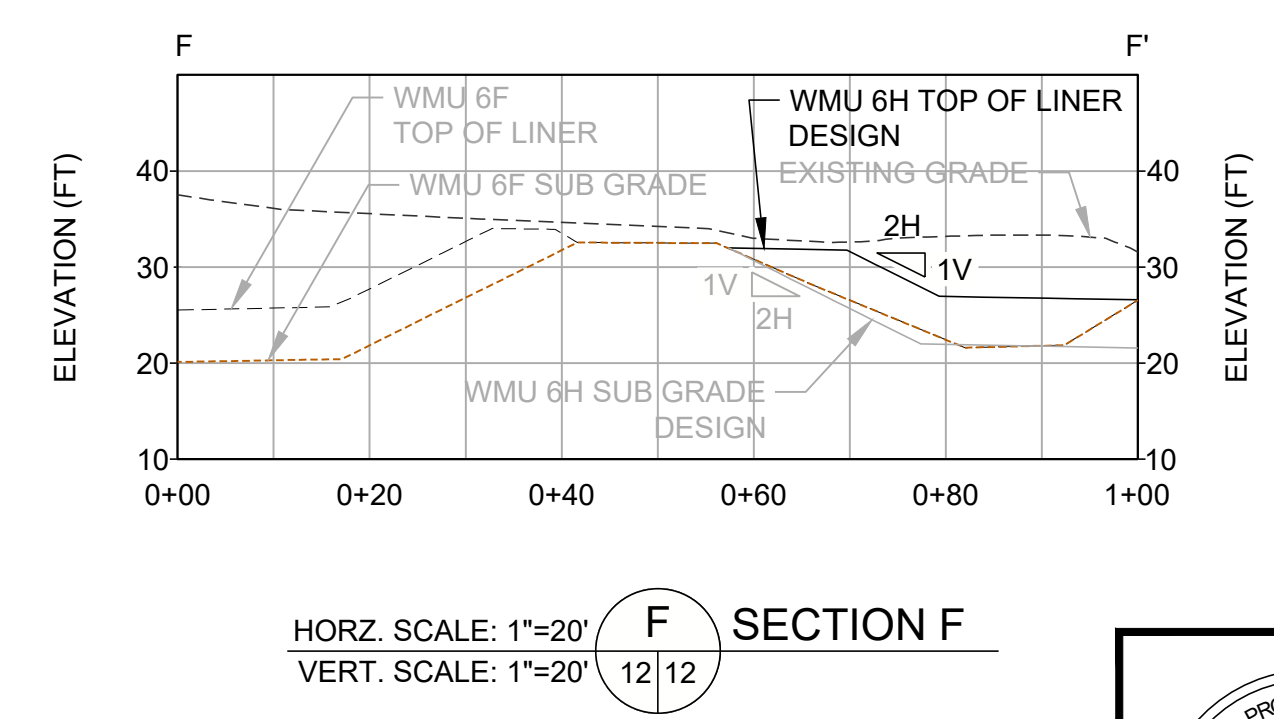
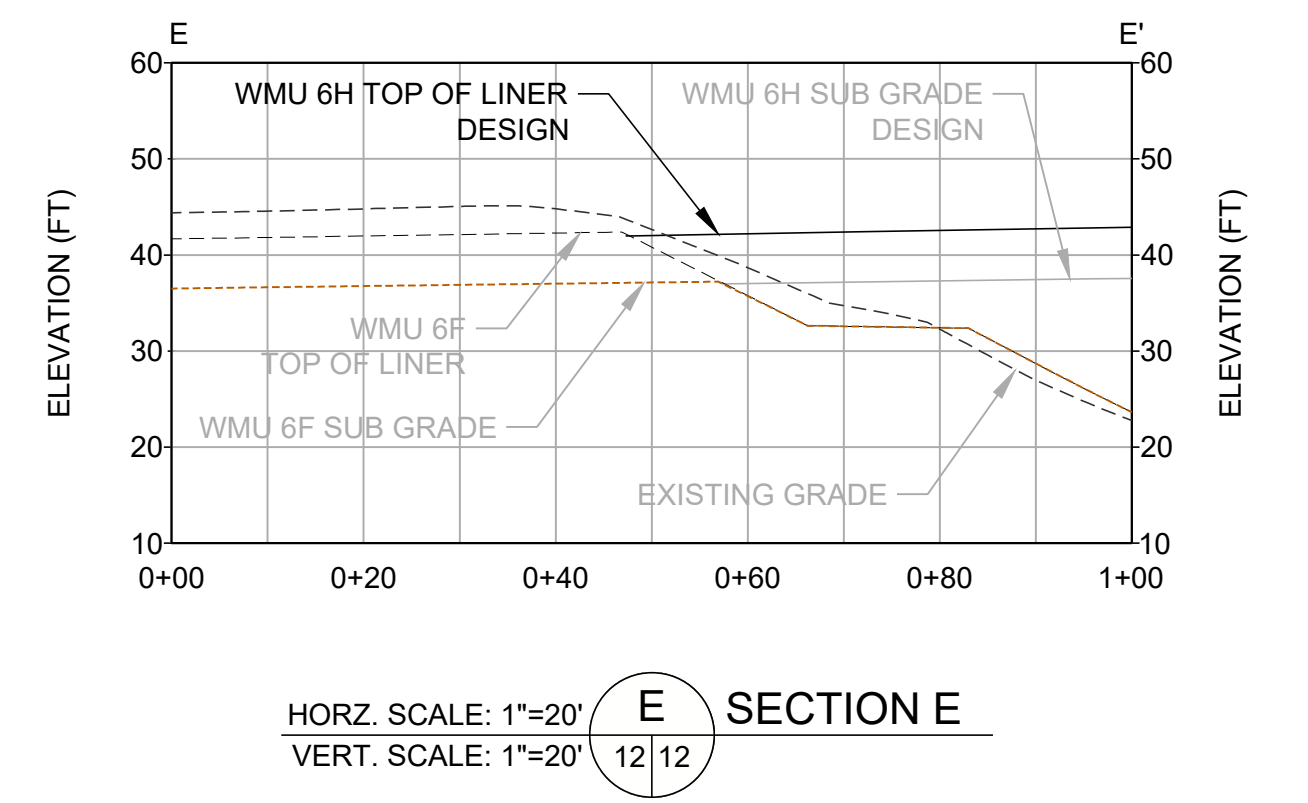
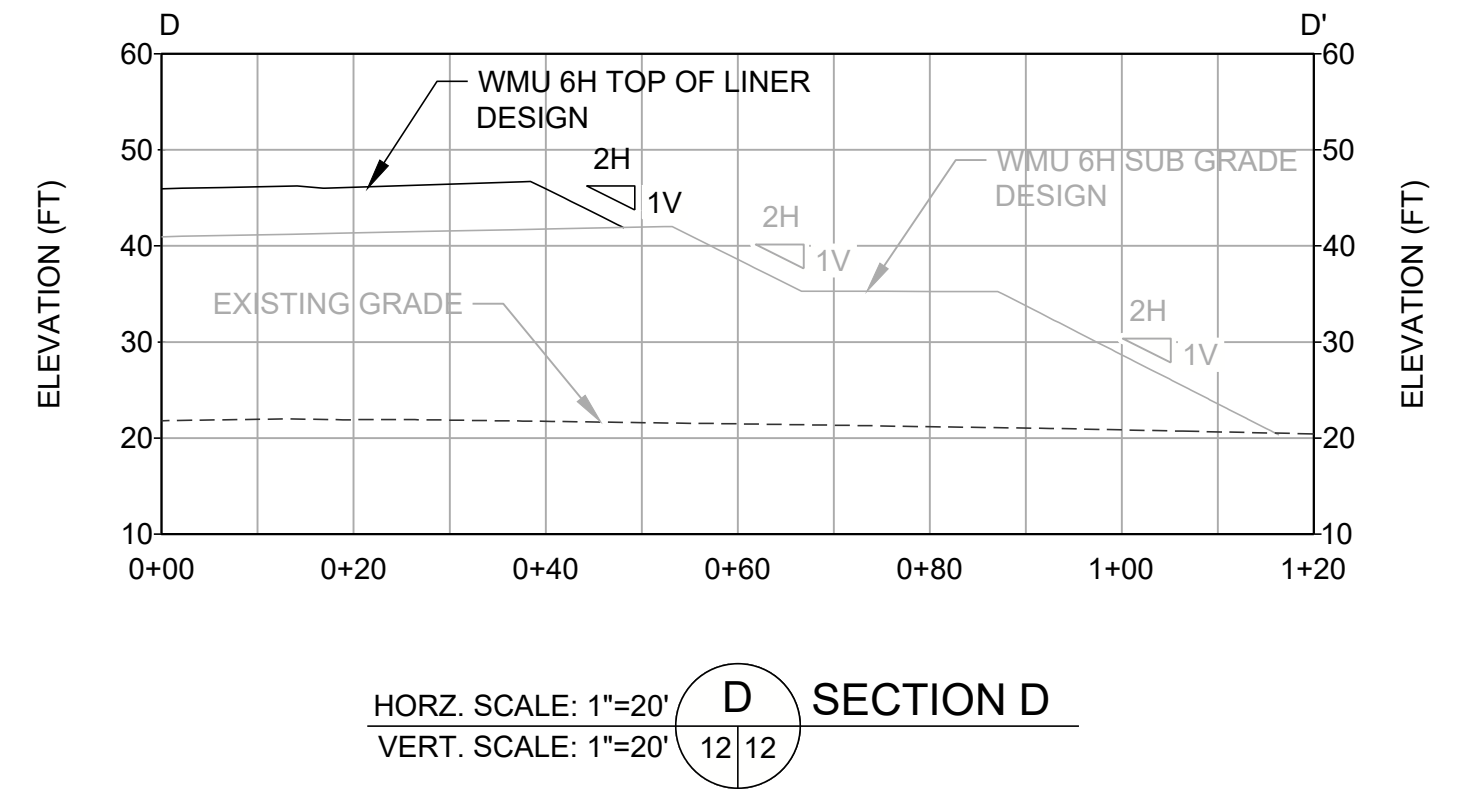
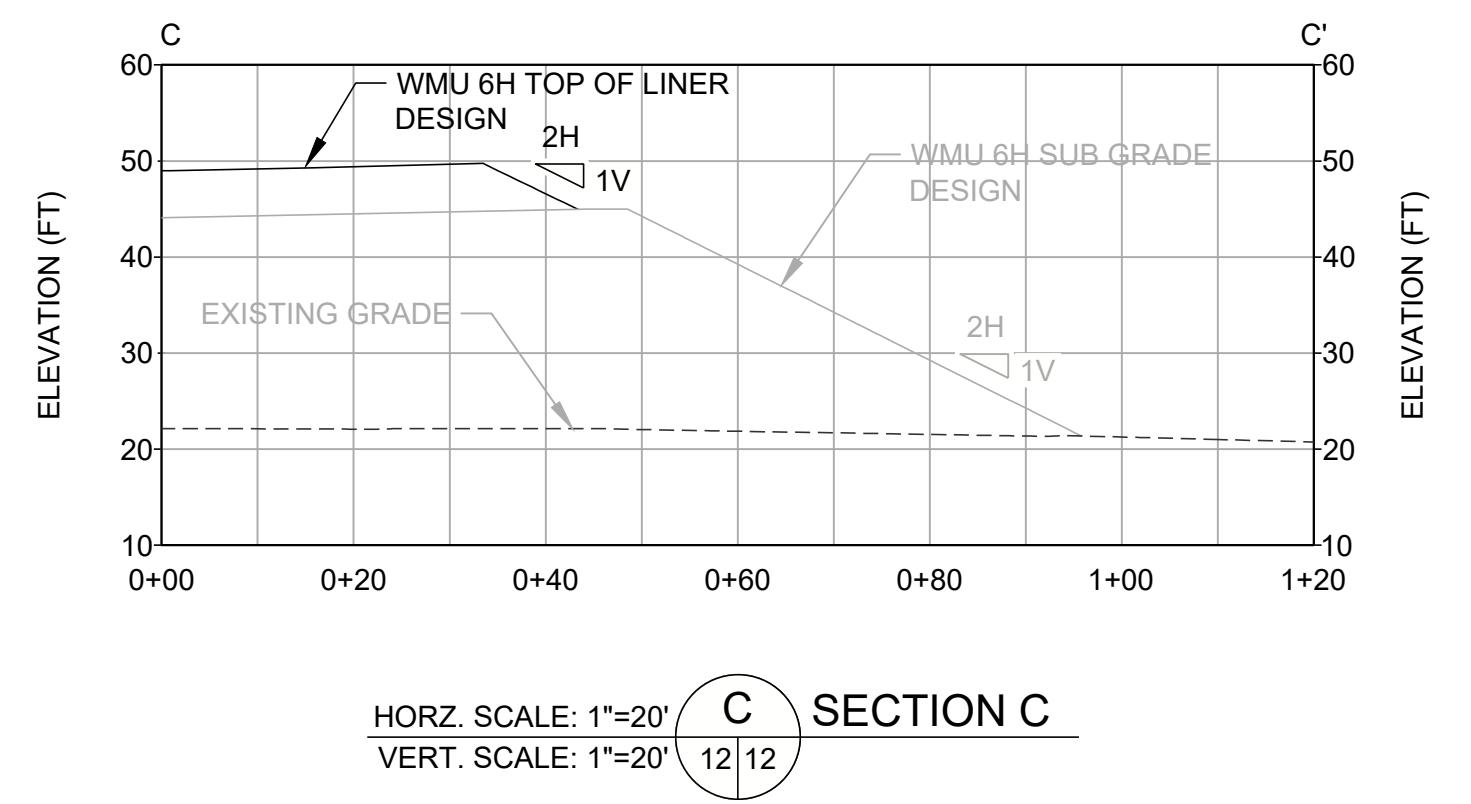
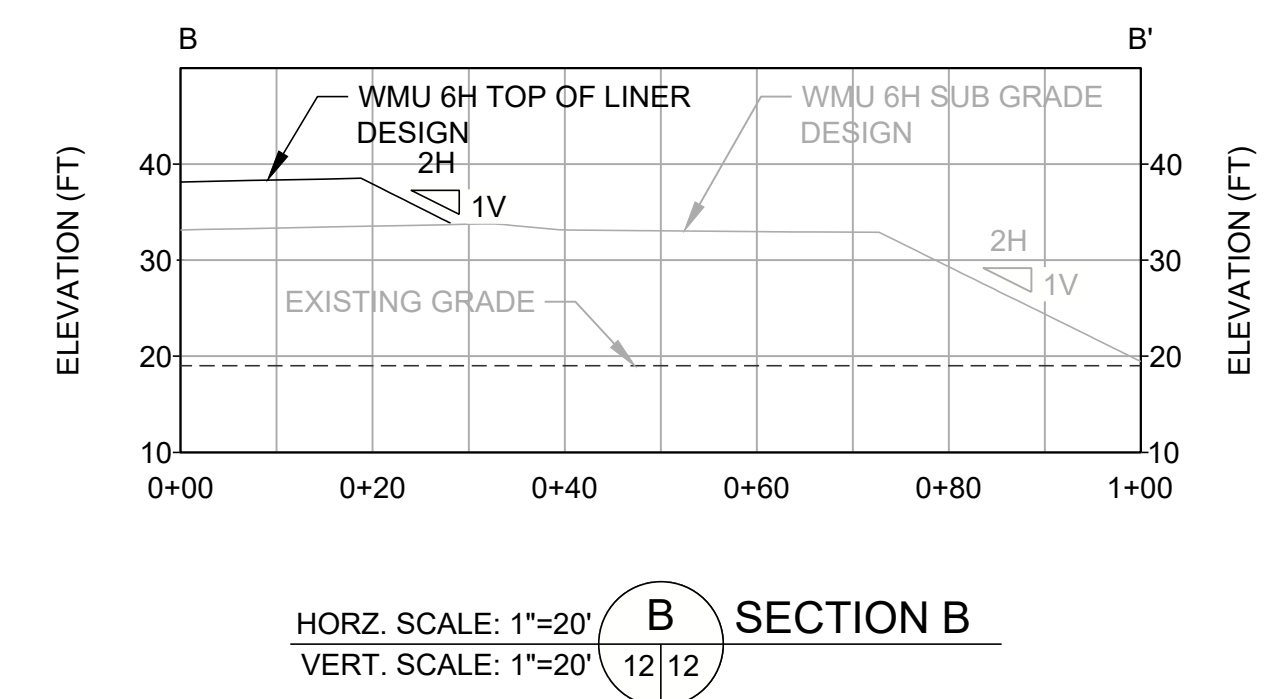
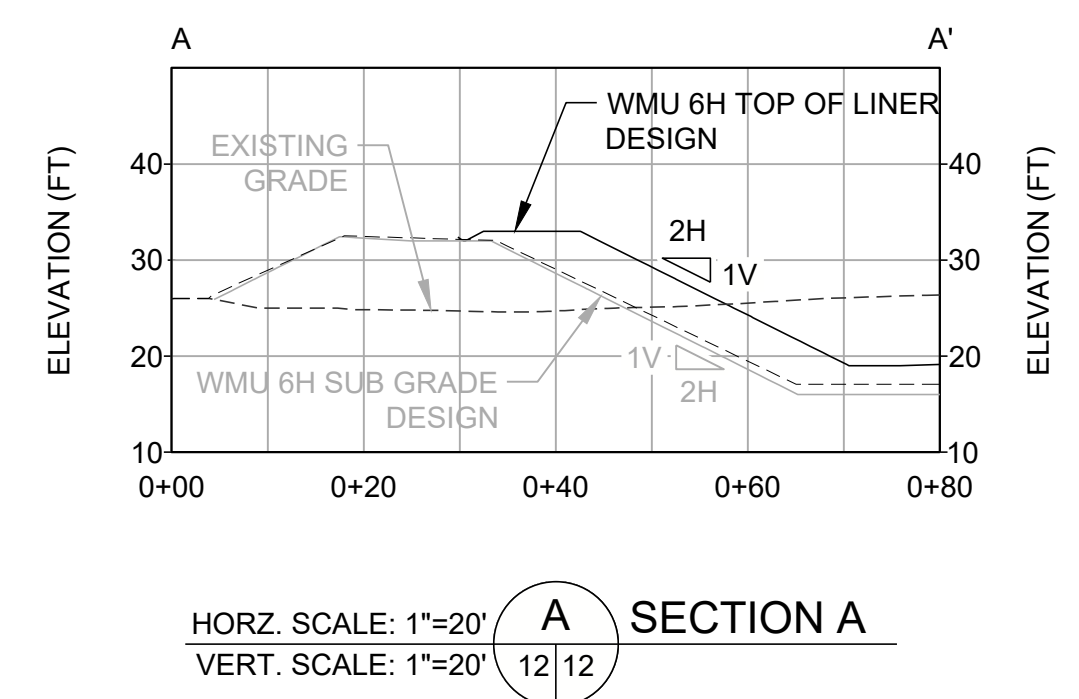
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| CONTROL POINT TABLE | | | |
|---------------------|---------------|--------------|----------------|
| POINT NO. | NORTHING (FT) | EASTING (FT) | ELEVATION (FT) |
| 2000 | 1979356.56 | 6653288.97 | 32.00 |
| 2001 | 1979370.83 | 6653288.10 | 31.75 |
| 2002 | 1979382.30 | 6653303.87 | 26.02 |
| 2003 | 1979391.42 | 6653563.87 | 21.57 |
| 2004 | 1979396.85 | 6653569.60 | 18.85 |
| 2005 | 1979391.42 | 6653575.39 | 21.57 |
| 2006 | 1979360.24 | 6653817.41 | 33.86 |
| 2007 | 1979366.75 | 6653810.86 | 33.99 |
| 2008 | 1979384.23 | 6653793.29 | 25.25 |
| 2009 | 1979615.55 | 6653818.45 | 32.66 |
| 2010 | 1979614.37 | 6653820.46 | 32.66 |
| 2011 | 1979663.35 | 6653809.38 | 33.94 |
| 2012 | 1979655.17 | 6653815.94 | 33.81 |
| 2013 | 1980531.07 | 6653805.72 | 49.19 |
| 2014 | 1980529.55 | 6653772.92 | 49.76 |
| 2015 | 1980541.84 | 6653244.55 | 42.07 |
| 2016 | 1980361.39 | 6653244.62 | 36.47 |
| 2017 | 1979566.94 | 6653291.85 | 31.75 |
| 2018 | 1979543.72 | 6653292.42 | 31.75 |



REFERENCE(S)
1. BASE TOPOGRAPHY BY R.E.Y. ENGINEERS, INC., DATED OCT. 1, 2020 AND JULY 1, 2016, NAD 1983, ZONE II, US FOOT. ELEVATIONS ARE BASED ON NAVD 88.

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DEPARTMENT OF COMMUNITY SERVICES
DIVISION OF INTEGRATED WASTE MANAGEMENT
44080 County Road 28H, Woodland, CA 95776-9101

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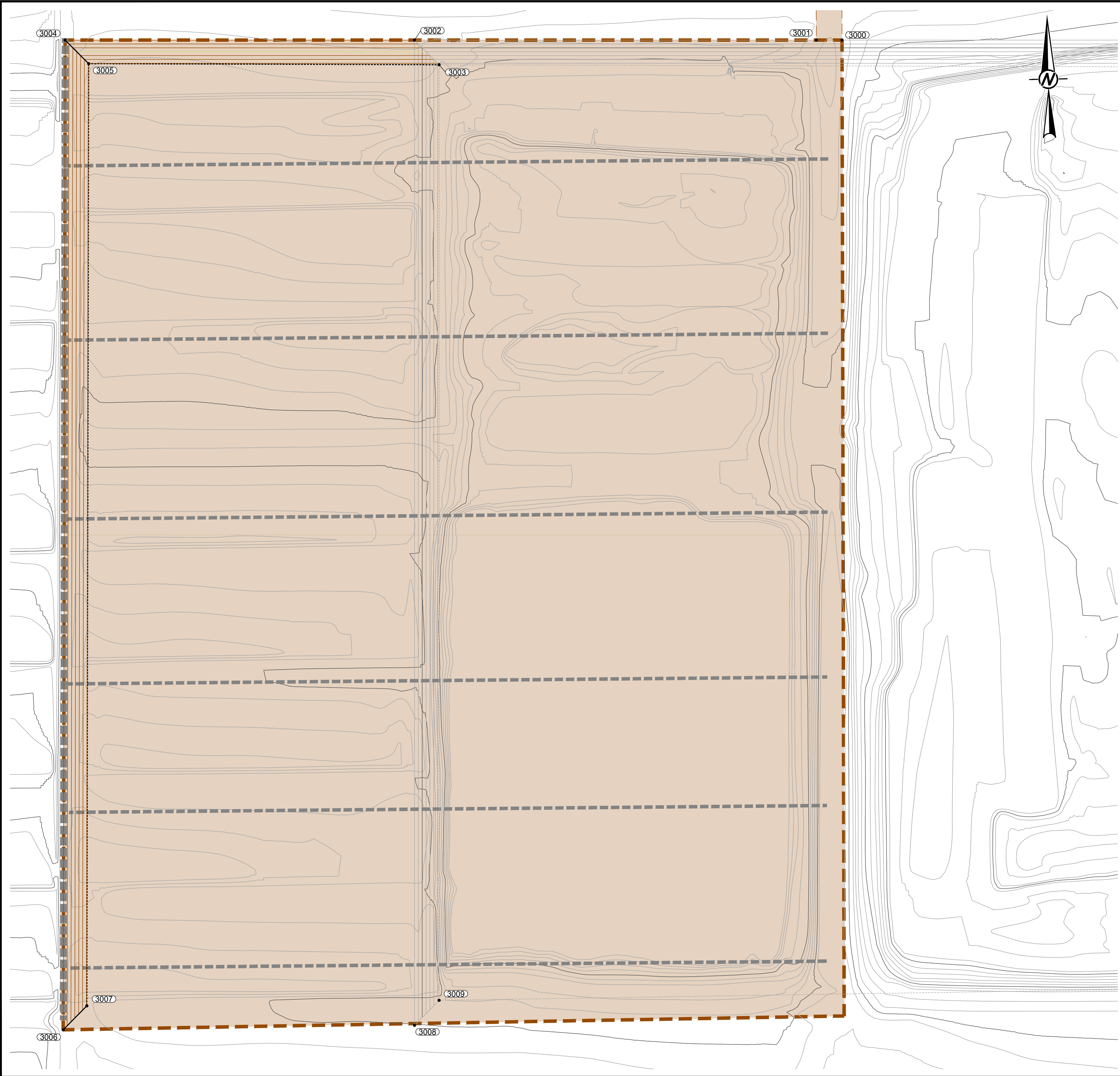
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YOLO COUNTY CENTRAL LANDFILL
WMU 6H LINER SYSTEM
TOP OF LINER CONTROL POINTS

SHEET NUMBER 12

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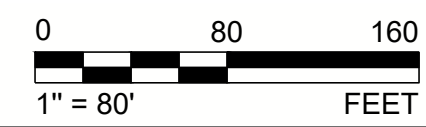


| CONTROL POINT TABLE | | | |
|---------------------|---------------|--------------|----------------|
| POINT NO. | NORTHING (FT) | EASTING (FT) | ELEVATION (FT) |
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| 3001 | 1979212.69 | 6648622.85 | 26.00 |
| 3002 | 1979225.39 | 6647998.27 | 26.00 |
| 3003 | 1979186.33 | 6648035.77 | 13.24 |
| 3004 | 1979236.44 | 6647455.21 | 26.00 |
| 3005 | 1979199.04 | 6647491.05 | 13.78 |
| 3006 | 1977698.59 | 6647420.95 | 26.00 |
| 3007 | 1977734.96 | 6647458.42 | 13.78 |
| 3008 | 1977694.45 | 6647967.13 | 26.00 |
| 3009 | 1977732.45 | 6648006.21 | 13.24 |

REFERENCE(S)

- BASE TOPOGRAPHY BY R.E.Y. ENGINEERS, INC., DATED JUL. 1, 2020, NAD 1983, ZONE II, US FOOT. ELEVATIONS ARE BASED ON NAVD 88.

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| <p>YOLO COUNTY DEPARTMENT OF COMMUNITY SERVICES DIVISION OF INTEGRATED WASTE MANAGEMENT 44090 County Road 28H, Woodland, CA 95776-9101</p> <p>DIRECTOR APPROVED: MARCH 14, 2019, P.E. NUMBER C44910</p> | <p>DESIGN BY: MAL 10/29/21</p> <p>DRAWN BY: MAL 10/29/21</p> <p>CHECK BY: JGD 10/29/21</p> <p>ISSUED FOR BID: 0 10/29/21</p> <p>SCALE: SHOWN</p> |
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| <p>SHEET NUMBER 13</p> | |

PART 6 – CONSTRUCTION QUALITY ASSURANCE PLAN



Construction Quality Assurance Plan

WMU 6, Module H Base Liner System

Submitted to:

Yolo County Central Landfill

44090 County Road 28H Woodland, CA 95776

Submitted by:

Golder Associates Inc.

1000 Enterprise Way, Suite 190, Roseville, California, USA 95678

+1 916 786-2424

20365253

October 2021



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1.0 INTRODUCTION

This plan addresses the Construction Quality Assurance (CQA) procedures required during the construction of the Waste Management Unit 6, Module H (WMU 6H) Base Liner System at the Yolo County Central Landfill, near Woodland, California. This CQA Plan establishes procedures to verify that construction is in accordance with the approved engineering standards and Specifications, meets the appropriate regulatory requirements, and develops the necessary documentation for submittal to the regulatory agencies.

The objective of this plan is to establish:

- Duties of parties responsible for the CQA program
- Qualification requirements of the CQA Engineer(s)
- Inspection activities
- Sampling strategies
- Document control measures
- Procedures for approving the materials used for construction
- Methods for assuring compliance to design standards and Technical Specifications during construction
- Procedures for resolving issues that may occur concerning the design and construction
- Documentation of construction and testing for submittal to the regulatory agency for their review

The intent of the CQA Plan is to provide independent third party verification and testing to demonstrate that the Contractors and Installers have met their obligations in the supply and installation of components and materials according to the design documents, Technical Specifications, and regulatory requirements. Quality control is provided by the Manufacturers, Installers, and Contractors and refers only to their actions taken to ensure that materials and workmanship meet the requirements of the plans and Technical Specifications.

2.0 PARTIES INVOLVED WITH CONSTRUCTION QUALITY ASSURANCE

The following section provides descriptions of the parties referred to in this Construction Quality Assurance Plan (CQA Plan) including their responsibilities and qualifications.

2.1 Owner/Operator

Yolo County is the Owner and Operator of this landfill. For the purposes of this CQA Plan and the Technical Specifications, all references to the Owner or Operator shall mean Yolo County Central Landfill.

2.2 Project Manager

The Project Manager is the official representative of the Owner and is responsible for construction activities at the facility, including oversight and construction management. The Project Manager is responsible for coordinating

construction and quality assurance activities for the project. The Project Manager shall be responsible for the resolution of all quality assurance issues that arise during the liner system construction and must be involved in any decisions that may affect future operations at the landfill.

2.3 Design Engineer

The Design Engineer, also referred to as the "Designer" or "Engineer", is the individual or firm responsible for the design and preparation of the project construction drawings (Drawings) and the Technical Specifications. The Designer is responsible for approving all design and Technical Specification changes, modifications, or clarifications encountered during construction. The Design Engineer for the Yolo County Central Landfill WMU 6H Base Liner System is Golder Associates Inc., Roseville, California. During the course of the project, the Design Engineer shall remain in communication with the Project Manager.

2.4 CQA Engineer and CQA Monitor(s)

The CQA Engineer and CQA Monitor(s) will be responsible for understanding this CQA Plan and shall conduct CQA testing, monitoring, documentation and reporting, as required by this CQA Plan. The CQA Engineer will be the engineer-of-record and will stamp the final report. The CQA Engineer is responsible for implementation of the CQA Plan and shall provide supervision of the CQA activities. The CQA Engineer shall be a California registered civil engineer or engineering geologist experienced in the construction of landfill base liner systems. The CQA Engineer will communicate directly with the Project Manager.

2.5 Geosynthetics Manufacturer

The geosynthetics manufacturer(s), also referred to as the "Manufacturer," is responsible for production of the geosynthetic components outlined in this plan. The Manufacturer may be affiliated with the Geosynthetics Installer. Each Manufacturer must pre-qualify that they are able to produce material that meets the requirements of the Technical Specifications. The Geosynthetics Manufacturer will submit materials and documentation to the Project Manager or Geosynthetics Installer.

2.6 Geosynthetics Installer

The Geosynthetics Installer, also referred to as the "Geosynthetics Installation Contractor" or the "Installer," is responsible for proper installation of the geosynthetic components, in accordance with the Project Drawings and Specifications. The Installer shall also be responsible for procurement of the geosynthetic materials in conformance with the Technical Specifications unless otherwise arranged by the Owner. The Installer may be affiliated with the Manufacturer. The Installer will work as a subcontractor to the Earthworks Contractor.

The Installer must meet the experience requirements outlined in the Technical Specifications. The Installer shall provide a qualified Superintendent who will provide full-time technical guidance to the field crew. The

Superintendent will represent the Installer at all site meetings and will act as the spokesman for the Installer on the project.

Welding technicians will be evaluated based on performance. The CQA Engineer, through the Project Manager, reserves the right to reject any welding technician whose performance is unsatisfactory.

2.7 Earthworks Contractor

The Earthworks Contractor, also referred to as the "Contractor," is responsible for completion of the site work as defined by contract with the Owner and in accordance with the Drawings and Specifications except for materials provided by the Owner or Geosynthetics Manufacturer and work performed by the Geosynthetics Installer if independently contracted. The earthworks Contractor shall have previous experience constructing similar liner systems. The Earthworks Contractor will be responsible for retaining a surveyor to set lines and grades required for excavation and construction. The Earthworks Contractor will be contracted with the Owner and will communicate directly with the Project Manager.

2.8 CQA Surveyor

The CQA Surveyor is the firm or individual responsible for performing the quality assurance surveying tasks outlined in this plan, including the preparation of stamped as-built survey record drawings to be included in the CQA Certification Report. CQA surveying shall be performed under the direction of a California State Licensed Land Surveyor. The CQA Surveyor will be contracted with the Earthworks Contractor. The CQA Surveyor will communicate directly with the Earthworks Contractor.

2.9 Independent CQA Laboratory

The Independent CQA Laboratory (CQA Lab) is the third party responsible for performing the quality assurance soils and/or geosynthetics laboratory testing tasks listed in this CQA Plan in accordance with the specified methodology. Standards for testing include, but are not limited to, American Society for Testing and Materials (ASTM), California Department of Transportation (Caltrans) California Test Methods (CTM), or Geosynthetic Institute (GSI) methods. The CQA Lab is directed by the CQA Engineer and may be affiliated with the CQA Consultant firm or company. The geosynthetics-testing laboratory shall be accredited by the Geosynthetics Accreditation Institute Laboratory Accreditation Program (GAI-LAP). The CQA Lab shall not be affiliated with the Earthworks Contractor or Geosynthetics Installer. The CQA Lab will communicate directly with the CQA Engineer.

2.10 ELLS Surveyor

The ELLS Surveyor is the third party responsible for performing the quality assurance electrical leak location survey (ELLS) task listed in this plan. The ELLS Surveyor is directed by the CQA Engineer and may be affiliated with the CQA Consultant firm or company. The ELLS Surveyor shall not be affiliated with the Earthworks Contractor or Geosynthetics Installer. The ELLS Surveyor will communicate directly with the CQA Engineer.

2.11 Meetings

Meetings shall be held during the life of the project to enhance coordination among the various parties involved. Meetings will include a Pre-Construction Meeting, Progress Meetings, and Resolution Meetings if necessary.

2.11.1 Pre-Construction Meeting

A Pre-Construction meeting will be held at the site prior to the start of construction. The Design Engineer, Project Manager, CQA Monitor, CQA Engineer, Geosynthetics Installer, Earthworks Contractor, and others designated by the Operator shall attend this meeting. The purpose of this meeting will at a minimum:

- Define lines of communication, responsibility, and authority
- Conduct a site inspection to discuss work areas, work plans, stockpiling, lay-down areas, access roads, haul roads, and related items
- Review the project schedule
- Review the Construction Drawings, CQA Plan, and Technical Specifications
- Review work area security and safety protocol

The CQA Engineer or his designee will document this meeting and copies of the meeting minutes will be distributed to all parties.

2.11.2 Progress Meetings

Weekly progress meetings will be held. At a minimum, the CQA Engineer, the Project Manager and the Contractor(s) will attend these meetings. The CQA Engineer is responsible for organizing and conducting the progress meetings. The purpose of these meetings will be to:

- Review the previous week's accomplishments and activities
- Review upcoming scheduled work and project milestones
- Discuss any problems or potential construction problems
- Review the results and status of CQA field and laboratory testing

The CQA Engineer will document these meetings and the minutes shall be transmitted to all in attendance.

2.11.3 Resolution Meetings

Special meetings will be held, as needed, to discuss and resolve potential problems or deficiencies. At a minimum, these meetings will be attended by the Project Manager, CQA Engineer, CQA Monitor, and the Installer and/or Contractor. If the problem relates to a design issue, the Design Engineer shall also be present. The CQA Monitor will document the meeting.

When deficiencies (items that do not meet project requirements) are discovered, the CQA Monitor or CQA Engineer shall immediately determine the nature and extent of the problem and notify the Installer or Contractor. If unsatisfactory test results identify a deficiency, additional tests will be performed to define the extent of the deficient material or work area.

The Installer or Contractor shall correct the deficiency to the satisfaction of the CQA Engineer. If unable to correct the problem, the CQA Engineer will notify the CQA Monitor who will assist during problem resolution. If the solution involves a design revision, the Project Manager shall also be contacted. Design revisions can only be made by the Design Engineer.

The corrected deficiency shall be re-tested and/or approved before any additional related work is performed by the Installer or Contractor. Retest results shall be recorded by the CQA Monitor and included in the final report documentation.

3.0 EARTHWORK EARTHWORK CONSTRUCTION QUALITY ASSURANCE

Construction of the landfill facility or specified earthwork must be in accordance with the approved Construction Drawings and Technical Specifications. This CQA Plan establishes the construction quality assurance monitoring and testing program designed to ensure construction compliance. The earthwork quality assurance testing program consists of testing of soil and rock materials used in the landfill facility. Quality assurance testing and observation is required during construction of the low-permeability soil layer test pad and during construction of the liner system components.

3.1 Test Pad Construction

3.1.1 Purpose and Scope

The purpose of the test pad is to establish the placement and compaction procedures to be used to construct the low-permeability soil components of the liner system and to ensure conformance with the Technical Specifications, and state and federal requirements. The test pad program is intended to establish methods, equipment, and procedures for attaining the specified properties, not to pre-qualify materials for the low-permeability soil component. Once the methods and procedures have been verified by completing a successful test, the Contractor must use the same method and procedures to construct the low-permeability soil layer.

3.1.2 Subgrade Preparation

- The test pad shall be in an area of the project site designated by the Project Manager
- The area within the limits of the test pad shall be cleared and grubbed of all trees, debris, stumps, and any other vegetation. After clearing and grubbing, the area shall be stripped of topsoil and/or organic materials
- The surface of the subgrade shall be proof-rolled with a heavy-wheeled vehicle to detect soft zones, irregularities that may require removal and replacement. The finished subgrade surface shall be sloped at a grade of 1% to 3%

- Construction of the test pad shall not commence until the condition of the subgrade has been examined and documented by the CQA Monitor

3.1.3 Test Pad Construction Procedures

The test pad shall be constructed in a rectangular shape to a minimum plan area of 30 feet by 45 feet. The test pad should consist of a minimum 2-foot thick low-permeability soil layer placed and compacted in accordance with the requirements of the Technical Specifications.

The low-permeability soil layer in the test pad shall be constructed in four lifts not exceeding 8 inches loose and 6 inches in compacted thickness. The soil material shall be compacted within the specified moisture-density window. If appropriate, the moisture-density window may be modified by the CQA Engineer to improve permeability or constructability based on the results of the test pad, if approved by the Design Engineer. The CQA Engineer shall finalize the moisture-density compaction window in writing prior to full-scale construction of the low-permeability soil layer.

When the CQA Engineer has determined that each lift meets the target dry density and moisture content requirements, the following lift shall be constructed. The completed low-permeability soil layer shall be sealed by rolling with appropriate equipment (e.g., rubber tired or smooth drum roller). Overbuilding the test pad and trimming back may be necessary to obtain a sufficiently smooth top of clay surface and to protect the test pad from desiccation and cracking. Protective plastic sheeting held in place by a 6-inch thick layer of soil shall be placed over the test pad surface in the vicinity of the proposed field infiltration test location(s).

3.1.4 Monitoring and Testing

The CQA Engineer shall monitor and document the borrow material and construction of each lift of the test pad and shall ensure that construction is performed in accordance with the appropriate sections of the Technical Specifications. Monitoring and documentation shall include:

- Weather conditions during construction
- Equipment used in construction
- Manner in which equipment was used
- Soil type and USCS classification
- Moisture content and dry density measurements for each lift
- Approximate thickness of each uncompacted and compacted soil lift

Field and laboratory testing shall be performed by the CQA Monitor, as a minimum, during construction of the subgrade and low-permeability soil layers in the test pad and shall include those tests presented in Table 1.

Table 1: Test Pad Construction Testing Frequency

| TEST DESIGNATION | ASTM DESIGNATION | LOW-PERMEABILITY SOIL LAYER | SUBGRADE |
|---|------------------|---|----------|
| Moisture-Density | D1557 | 1 Test | 1 Test |
| Nuclear Moisture-Density | D6938 | 4 Tests Per Lift ¹ | 3 Tests |
| Moisture % - Oven | D2216 | 4 Tests Per Lift ² | 1 Test |
| Moisture % - Microwave | D4643 | 4 Tests Per Lift ² | 1 Test |
| Particle Size | D6913/D1140 | 1 Test Per Lift | -- |
| Atterberg Limits | D4318 | 1 Test Per Lift | -- |
| Hydraulic Conductivity | D5084 (5 psi) | 1 Test Per Lift ^{3,4} | -- |
| Field-Scale Infiltration Test & Permeability Evaluation | D6391 | Two-Stage Borehole Permeameter ⁴ /minimum of 4 boreholes | -- |
| Soil Classification | D2487/2488 | Each Lift | Visual |

Notes to Table 1:

1. Nuclear Gauge tests for moisture content and dry density shall be performed at evenly spaced locations in a grid pattern within the footprint of the test pad. Acceptance will be based on test results that fall within the compaction window developed by the Design Engineer, or as modified by the CQA Engineer based on pre-construction testing.
2. A correlation shall be developed between the moisture contents as determined by the nuclear gauge and conventional oven and/or microwave oven methods during construction of the test pad in order to facilitate construction testing and placement of low-permeability fill during full-scale operations.
3. Upon completion of the test pad, samples shall be collected using 3-inch outside diameter thin-walled sampling tubes (Shelby tubes) in accordance with ASTM D1587 or by the block sampling technique in accordance with ASTM D4220, at the discretion of the CQA Engineer. Two samples in each lift shall be collected to represent the low-permeability soil layer. Samples should be collected outside of the future location of the field scale infiltration test.
4. The hydraulic conductivity evaluated in the laboratory (ASTM D5084) for the 3-inch diameter samples shall be correlated to the hydraulic conductivity evaluated in the field scale testing. Effective confining pressures of 5 psi shall be applied during the test. The correlation is to provide a means for establishing criteria for laboratory and field testing of the full-scale (construction) low-permeability soil layer. In addition, in-situ hydraulic conductivity data is to provide information demonstrating the feasibility of constructing a low-permeability soil layer meeting the Technical Specifications.

3.1.5 Test Pad Data Interpretation

The interpretation of the test results shall focus on the feasibility of constructing a full-scale low-permeability soil layer in conformance with the project and regulatory requirements. A letter report summarizing the test results shall be issued by the CQA Engineer at the completion of the test pad testing program. This letter report shall also be included as a part of the final project CQA documentation.

3.2 Construction Monitoring and Testing

All components of the construction shall be observed and tested as required by the CQA Monitor to verify that the construction is in accordance with the Technical Specifications. The CQA Engineer shall review the work performed

by the CQA Monitor and identify inadequate construction methodologies or materials that may adversely impact the performance of the facility being constructed and/or existing structures. Visual observations and verification of the independent survey required for specific layers throughout the construction process shall be made to evaluate whether the materials are placed to the lines and grades as shown on the Drawings.

The CQA Monitor or CQA Engineer will give the Project Manager sufficient notice of anticipated completion of the construction components so that related CQA documentation may be reviewed and accepted without delay to the Contractor. Specific CQA observations and/or testing are required for the following:

- Subgrade preparation
- General fill
- Foundation and low-permeability soil layers
- Geomembrane liner including seams (Section 4)
- Geotextile filter layer (Section 4)
- Geocomposite layers (Section 4)
- HDPE piping (LCRS, leak detection, and lysimeter) (Section 4)
- LCRS gravel
- Operations layer

3.2.1 Subgrade Preparation for General Fill

The CQA Monitor shall observe and document the subgrade preparation including:

- Monitoring the stripping of vegetated soil and growth media to be stockpiled in the area designated by the Project Manager
- Monitoring that appropriate dust control measures are implemented
- Visually inspecting the excavation for moisture seeps, soft or excessively wet areas, and unstable slopes
- Monitoring subgrade preparation and confirming that the surface of the subgrade is free of soft, organic, and otherwise deleterious materials, and that the surface is firm and unyielding
- Verify that the CQA Survey has been completed and that the Record Drawings furnished by the surveyor indicates compliance with the lines, grade, elevations, and tolerances as indicated by the Project Drawings and Specifications

3.2.2 General Earthworks Construction Testing

The general earthworks components of the liner systems include the general fill and subgrade for liner materials. Borrow materials will be obtained from excavation or areas designated by the Owner. CQA observation and/or testing is required during construction to verify that the materials and construction are in accordance with the

Technical Specifications. The tests to be performed, including testing frequency, for each material type are presented in Table 2. The testing frequencies specified in Table 2 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

Table 2: General Fill Construction Testing Frequency

| TEST DESIGNATION | ASTM DESIGNATION | GENERAL FILL |
|--|------------------|---------------------------------------|
| Moisture-Density | D1557 | 1 Per 10,000 CY or Each Material Type |
| Nuclear Moisture-Density | D6938 | 1 Per 500 CY |
| Sand Cone Test or Drive Cylinder Test ² | D1556/ D2937 | 1 Per 20 Nuclear Density Tests |
| Moisture Content | D2216/D4643 | As Necessary to Check Gauge |
| Particle Size | D6913/D1140 | --- |
| Soil Classification | D2487/2488 | Each Material Type |

Notes to Table 2:

1. Tests shall be performed to provide adequate testing coverage throughout the fill. For large fills in small areas, the testing frequency shall be increased as necessary to ensure testing for each lift of soil placed.
2. Drive Cylinder test may be performed on fine-grained clay or silt materials only.

3.2.3 Subgrade Preparation for Liner

Construction observation and monitoring during subgrade preparation includes:

- Monitoring fill placement to ensure that the Contractor obtains borrow materials from the approved excavation or stockpile location
- Observe construction staking to verify that the general fill and subgrade soils are placed to the lines, grades, and elevations shown on the Drawings
- Verify that fill is placed in loose lifts that result in a nominal compacted thickness of 6 inches
- Verify that the Contractor adequately moisture conditions the borrow soils
- Perform field and laboratory testing in accordance with Table 2 to verify that the fill materials are placed to the moisture and density requirements indicated in the Technical Specifications
- Verify that the subgrade preparation and surface texture is suitable for supporting geosynthetic materials
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately reworks the areas which do not meet the Technical Specifications

- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications

3.2.4 Foundation Soil and Low-Permeability Soil Placement

CQA observation and/or testing is required during construction to verify that the low-permeability materials and construction are in accordance with the Technical Specifications. The tests to be performed, including testing frequency, are presented in Table 3. The testing frequencies specified in Table 3 may be increased when construction conditions warrant additional tests. Additional tests shall be recommended by the CQA Monitor and approved by the CQA Engineer.

Table 3: Low-Permeability Soil Layer & Foundation Soil Layer Construction Testing Frequency

| TEST DESIGNATION | ASTM DESIGNATION | LOW-PERMEABILITY SOIL ¹ | FOUNDATION SOIL |
|--|------------------|--------------------------------------|--------------------------------------|
| Moisture-Density | D1557 | 1 Per 5,000 CY or change in material | 1 Per 5,000 CY or change in material |
| Nuclear Moisture-Density ² | D6938 | 1 Per 500 CY | 1 Per 500 CY |
| Moisture Content | D2216/D4643 | As Necessary to Check Gauge | As Necessary to Check Gauge |
| Sand Cone, or Drive Cylinder | D1556, D2937 | 1 Per 20 Nuclear Density Tests | 1 Per 20 Nuclear Density Tests |
| Particle Size ² | D6913/D1140 | 1 Per 1,500 CY | 1 per 5,000 CY |
| Atterberg Limits ² | D4318 | 1 Per 1,500 CY | 1 per 5,000 CY |
| Soil Classification ² | D2487/D2488 | 1 Per 5,000 CY | Each Material Type |
| Laboratory Hydraulic Conductivity on Field Collected Sample ^{2,3,4} | D5084 (15 psi) | 1 Per 1,500 CY | N/A |

Notes to Table 3:

1. Specified frequency or one per material type and source, whichever is greater.
2. Tests shall be performed on an approximately even grid to provide adequate testing coverage.
3. Samples will be collected and transported to the laboratory using the same procedures selected by the CQA Engineer for the test pad (i.e., Shelby tubes or block samples).
4. Laboratory samples will be tested at confining pressures of 15 psi.

Construction observation and monitoring during the low-permeability soil placement includes:

- Verify that the Contractor obtains low-permeability soil material from the approved excavation or borrow location
- Observe construction staking and/or grade control methods to verify that the low-permeability layer soils are placed to the lines, grades, and elevations shown on the Drawings

- Verify that the first lift of foundation layer soil is placed with maximum thickness of 16 inches loose resulting in a nominal compacted thickness of 12 inches. The bottom 6 inches of foundation layer soil on top of the geomembrane shall not be subject to compaction requirements. After the first lift of foundation layer soil, verify that fill is placed in loose lifts no more than 8-inches thick that result in a nominal compacted thickness of 6-inches or less.
- Verify that the Contractor adequately moisture conditions the borrow soils
- Perform field testing in accordance with Table 3 to verify that the fill materials are placed to the moisture and density requirements indicated in the Technical Specifications
- Perform laboratory testing in accordance with Table 3 to verify that the low-permeability soil exhibits the required material properties
- Promptly notify the Contractor of test results that affect the work. Notify the Project Manager of construction progress and of the results of all testing. In the event of failing tests, verify that the Contractor adequately reworks the areas which do not meet the Technical Specifications
- Observe that the Contractor takes adequate protective measures to maintain the surface of the compacted low-permeability soil layer and prevent desiccation cracking
- Verify that the CQA Survey has been completed and that the Record Drawing furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications

3.2.5 Gravel Layer Placement

Gravel components utilized for the liner system (lysimeter, leak detection, and LCRS) consist of a subrounded, well-sorted gravel material as indicated by the Technical Specifications. Both pre-construction and construction testing are required for the gravel materials. Pre-construction testing consists of testing proposed materials from samples obtained at the aggregate source. Construction testing consists of testing performed from samples obtained during delivery of materials during the module construction. The tests to be performed, including testing frequency, for each material type are presented in Table 4. The testing frequencies specified in Table 4 may be increased when construction conditions warrant additional tests. Additional testing may be performed on suspect materials as recommended by the CQA Engineer.

Table 4: Gravel Testing Frequency

| TEST DESIGNATION | ASTM DESIGNATION | LCRS GRAVEL |
|---|------------------|--|
| Sieve Analysis | D6913/C136 | 1 Per Source ¹ 1 Test Per 1,500 CY |
| Visual Classification | D2488 | Continuous Observation |
| Hydraulic Conductivity | D2434 | 1 Per Source ¹ 1 Test Per 3,000 CY |
| Fractured Faces (Gravel Fraction Only) | D5821 | 1 Per Source ¹ 1 Test Per 1,500 CY |

Notes to Table 4:

1. One test required for each source as a pre-construction test requirement. Additional testing is required at the specified frequency during construction.

The CQA Monitor shall observe that care is taken when placing the gravel on the HDPE geomembrane and that the geomembrane is not punctured or damaged during placement operations. The CQA Monitor shall observe and document that appropriate light ground pressure equipment is used and that such equipment avoids sharp turns. If the equipment or gravel placement procedures do not comply with the Technical Specifications, the geomembrane shall be exposed and inspected for potential damage.

Construction observation and monitoring required during the lysimeter, LDS, and LCRS gravel layer placement includes:

- Verification that all pre-construction testing has been performed and that laboratory test results indicate compliance with the Technical Specifications. The CQA Monitor shall assure that the Project Engineer and the Contractor receive prompt notification of material conformance
- Verify that the material upon which the gravel will be placed (HDPE geomembrane) has been installed in accordance with the Project Drawings and Specifications, and that all required testing, and as-built documentation have been completed
- Observation and monitoring of hauling equipment and spreading equipment to verify that (in the case of the LCRS gravel placement) the minimum thickness is maintained for spreading and hauling equipment above the HDPE geomembrane
- Collect and transmit to the laboratory the required number of gravel samples for testing. Communicate with the laboratory to verify that the materials tested comply with the Technical Specifications
- Visually observe the gravel materials as delivered to the site to inspect for any variability in the aggregate, taking care to observe for variation in gradation, excess fines, excess angular material, or any deleterious material present in the aggregate

- Verify that the CQA Survey has been completed and that the Record Drawings furnished by the surveyor indicates compliance with the lines, grades, elevations, and tolerances as indicated by the Project Drawings and Specifications

3.2.6 Operations Layer Placement

Construction observation and monitoring required during operations layer placement includes:

- Observation and monitoring of hauling and spreading equipment to verify that the minimum thickness is maintained between equipment and the underlying geosynthetic materials
- Verify the integrity of the geotextile layer by final inspection of all seams and geotextile panels
- Verify that the operations layer fill materials meet the Technical Specifications
- Observe that operations layer fill materials are pushed upslope on side slope areas
- Verify that the thickness of operations layer required by the Drawings is achieved
- Verify that operations layer and soil operations materials are placed in the locations indicated on the Drawings

Construction testing consists of testing performed from samples obtained during delivery of materials during the module construction. The tests to be performed, including testing frequency, for each material type are presented in Table 5. The testing frequencies specified in Table 5 may be increased when construction conditions warrant additional tests. Additional testing may be performed on suspect materials as recommended by the CQA Engineer.

Table 5: Operations Layer Construction Testing Frequency

| TEST DESIGNATION | ASTM DESIGNATION | OPERATIONS SOIL LAYER |
|---------------------|------------------|-----------------------|
| Particle Size | D6913/D1140 | 1 Per 3,000 CY |
| Soil Classification | D2487/2488 | Each Material Type |

3.3 CQA SURVEYING

CQA surveying shall be conducted such that all applicable standards are followed. The CQA Surveyor shall furnish "As-Built Survey Record Drawings" (also referred to as "As-Built Drawings" or "Record Drawings") for review by the CQA Engineer. The CQA Surveyor shall provide confirmation that surveyed materials are constructed to the lines and grades identified in the Project Drawings and Specifications. The CQA Monitor shall review and approve the drawings prior to placement of a new system component over the work. Required Record Drawings shall be as specified in the Technical Specifications. All CQA surveying shall be performed under the direction of a surveyor licensed to perform such work in the State of California. All Record Drawings shall be signed and sealed by the licensed surveyor who directed the CQA survey work. Record drawings shall be at a scale not smaller than 1 inch = 50 feet. The accuracy of the surveying shall be sufficient to determine if the measurements are within the tolerances specified in the Technical Specifications and Design Drawings.

The required surveying of liner system elevations shall be carried out on a 50-foot square grid at the locations designated on the Design Plans. The grid points for each successive earthworks layer shall have the same horizontal locations for comparison of layer thickness. Additional survey locations shall be recorded to define the following features in the liner system: toe of slope, hinge of slope, grade breaks, sumps, anchor trench, drainage system piping, and perimeter drainage ditch (only required if perimeter drainage ditch is part of project). The thicknesses of the geosynthetic liner system components on the Design Drawings shall be interpreted as negligible.

4.0 GEOSYNTHETICS CONSTRUCTION QUALITY ASSURANCE

Construction of the specified geosynthetics must be in accordance with the approved Design Drawings and Technical Specifications. This Quality Assurance program consists of reviewing Geosynthetics Manufacturer's and Installer's Quality Control submittals, material conformance testing, construction monitoring, and testing.

The types of geosynthetic materials used in the liner system construction include geomembrane, Agru MicroDrain (alternative for secondary liner), GCL, geotextile, geocomposite, and HDPE pipe and fittings. These geosynthetic materials are defined in the Technical Specifications. Prior to and during construction, these geosynthetic materials shall be sampled and tested to determine if they conform to Technical Specifications. All geosynthetic conformance testing shall be the responsibility of the CQA Engineer.

4.1 Review Quality Control Submittals

Prior to geosynthetic materials installation, the CQA Engineer shall review the Geosynthetic Installation Contractor's Quality Control submittals to confirm that materials meet Technical Specifications. The CQA Engineer shall review the following submittals for each geosynthetic material specified for the Project:

- Geosynthetic material samples, name of Manufacturer, and minimum material certifications which shall include the Manufacturer's minimum physical properties of the material, test methods (ASTM and GSI standards) used, and factory and site seaming methods
- Manufacturer's Quality Control Manual followed during the manufacturing process
- The origin (supplier's name and production plant), identification (brand name and lot number) and material properties of the resin used to manufacture the product
- Geosynthetics Installation Contractor's Quality Control Manual, for the installation and testing of the geosynthetics
- Resumes of the Installation Superintendent, Master Seamer, and Seamers to be assigned to this project (geomembrane only)
- Certification that both the Installation Superintendent and the Master Seamer have reviewed this Construction Quality Assurance Plan, Technical Specifications, and Drawings

- A copy of the Quality Control Certificates on each lot of resin issued by the resin Supplier for the specific material for this project. Geomembrane submittals shall include certification of the resin for extrusion welding rod
- The result of quality control testing conducted on the resin used in manufacturing the specific material for this project
- A listing which correlates the resin to the individual geosynthetic rolls and extruded materials
- A copy of the geosynthetic roll Quality Control Certificates which shall be supplied at a minimum frequency of one (1) per every fifty thousand (50,000) square feet of geosynthetic material continuously produced and supplied to the project unless otherwise presented in the Technical Specifications
- A panel layout drawing for geomembrane showing the proposed installation layout identifying field seams as well as any variance or additional details which deviate from the Design Drawings
- A detailed installation schedule for the project
- Certification that the extrusion welding rod to be used is comprised of the same resin type as the geomembrane to be used (geomembrane only)

4.2 Conformance Testing

Prior to geosynthetic installation, the CQA Engineer shall obtain samples of the geosynthetics for conformance testing to evaluate or confirm that these materials meet Technical Specifications. The conformance testing frequency shall be at a rate of 1 per 150,000 square feet, or one sample per lot, whichever results in the greater number of conformance tests, except for the geocomposite, which shall be sampled at a rate of 1 per 250,000 square feet, or one per lot, whichever results in the greater number of conformance tests. Samples shall be taken across the entire width of the roll and shall not include the first 3 feet. The samples shall be a minimum of 3 feet wide by the roll width. The CQA Monitor shall mark on the sample the machine direction, roll number, and the date the sample was obtained, and forward the sample to the geosynthetic laboratory.

The County may choose to use MicroDrain overlain by geotextile as an alternative to the secondary geomembrane and leak detection geocomposite. Prior to construction, the CQA Engineer shall perform additional conformance testing for interface shear and transmissivity to verify that the MicroDrain/Geotextile will meet the performance requirements of the Technical Specifications.

All conformance tests shall be performed in accordance with the Technical Specifications. The CQA Engineer shall review the test results and shall report any nonconformance to the Project Manager, the Project Manager, and the Geosynthetics Installation Contractor.

4.3 Geosynthetics Construction Monitoring and Testing

All geosynthetic components of the construction shall be monitored and tested to verify that the construction is in accordance with the Technical Specifications. The CQA Engineer shall identify inadequate construction

methodologies or materials that may adversely impact the performance of the facility being constructed and existing structures. Visual observations throughout the construction process shall be made to evaluate whether materials are placed to the lines and grades as shown on the Drawings.

The CQA Monitor shall review the following submittals provided by the Geosynthetics Installer during the project:

- Quality control documentation recorded during installation
- Daily reports detailing arrival and departure times, the personnel present on-site, the progress of the work, the arrival of materials, and any problems encountered
- Subgrade surface acceptance certificates for each area to be covered by the liner system, signed by the Geosynthetics Installation Contractor's Superintendent

The CQA Monitor shall observe and document the geosynthetic installation including:

- Delivery and unloading of geosynthetic materials to the site to verify that the materials are not damaged and are properly labeled
- Obtaining geosynthetic packaging identification slips for verification and generation of an on-site materials inventory
- Subgrade conditions prior to liner installation and verify that any deficiencies (e.g., surface irregularities, protrusions, excessively soft areas, stones, desiccation cracks) noted are corrected
- Verification that the CQA surveyor has verified all lines and grades
- Handling of geosynthetic materials from storage to the work area
- Temporary and permanent anchoring of geosynthetics to verify that design and Technical Specifications are met
- Verification that required overlap distances are met

4.3.1 Geomembrane

During geomembrane installation, the CQA Monitor(s) shall observe and document deployment, trial seams, field seaming, non-destructive and destructive seam testing, and repairs to determine whether the installation is in accordance with the Technical Specifications.

Storage and Handling - Geomembranes shall be stored at a location selected by the Project Manager. Rolls shall be off loaded using the appropriate equipment and straps. Rolls shall not be placed directly on the ground and shall be stacked no higher than three rolls. Only soft-sole shoes will be allowed on the deployed geomembrane and rub sheets shall be placed under equipment.

Deployment - The CQA Monitor shall verify that only approved materials are used, that each panel is given a unique panel number, that no geomembrane is placed during inclement or unsuitable weather conditions, that the

geomembrane is not damaged during installation, that excessive wrinkles are not present, and that anchoring is performed in accordance with the Technical Specifications and Design Drawings. The CQA Monitor shall record the deployment on a deployment log form.

Trial Seams - The CQA Monitor shall verify that seaming conditions are adequate, tests are performed at required intervals, specified test procedures are followed, and that re-testing is performed in accordance with the Technical Specifications. The Geosynthetic Installer shall perform pre-weld testing at the beginning of each crew shift and immediately following any work stoppage (e.g., for lunch, weather, etc.) of 30 minutes or more. Seaming operation shall not commence until the CQA Monitor has determined that the seaming process meets the Technical Specifications. Testing shall include visual observation of a trial seam a minimum of 42 inches long on the geomembrane material. The Installer shall mark the trial seam with date, ambient temperature, welding machine number, welding technician's initials, machine temperature, and speed. For extrusion welding, the Installer shall record the nozzle and extrusion settings and for fusion welding, the wedge temperature and machine speed setting shall be recorded. A one-foot portion of each trial seam sample shall be archived by the CQA Monitor at the site. The CQA Monitor shall record the trial seam test results on a trial seam log form.

Field Seaming - The CQA Monitor shall verify that only approved equipment and personnel perform welding, all welding is performed under suitable conditions as specified in the Technical Specifications, specified overlaps are achieved, seams are oriented in accordance with project requirements, and that grinding techniques and extrudate meet project requirements for extrusion welding. The CQA Monitor shall record all field seaming on the field seaming log forms.

Seaming shall not proceed at an ambient temperature below 32°F or above 104°F unless the Installer demonstrates he is capable of achieving acceptable results through the utilization of special seaming techniques. Such cold or hot weather seaming shall be proven by an approved program presented in the Technical Specifications or presented otherwise by the Design Engineer. If seaming operations are conducted at night, lighting equipment shall be sufficient to allow the Installer and CQA Monitor to adequately and safely perform their duties.

Non-Destructive Seam Continuity Testing - The CQA Monitor shall verify that all seams are non-destructively tested in accordance with the Technical Specifications. If the seam cannot be tested, the CQA Monitor shall observe cap strip operations and verify that test equipment and gauges are functioning properly and that test procedures are in accordance with the project requirements. The CQA Monitor shall verify that all failing tests are repaired and re-tested until passing results are achieved. The CQA Monitor shall record all non-destructive test locations on the vacuum test and pressure test log forms.

Destructive Seam Testing - The Geosynthetic Installer shall obtain samples, at locations selected and marked by the CQA Monitor, of the field seamed geomembrane. The samples shall be taken centered over the seam and prioritized as follows:

- All areas identified as suspect during non-destructive testing/monitoring
- Seams that appear suspect to the CQA Monitor
- A minimum of one sample per day
- A minimum of one sample for each geomembrane seaming apparatus
- A minimum of one sample for each representative working conditions (e.g., weather conditions)
- A minimum average of one sample every 500 feet of seaming for each apparatus

Two types of samples shall be obtained at each location. The first sample type shall consist of two specimens, each cut approximately 1 inch wide by 8 inches long, taken 48 inches apart. These specimens shall be tested for peel and shear strength in the field by the Installer using a calibrated field tensiometer capable of quantitatively measuring peel and shear strengths. The CQA Monitor shall observe all field tests and record the test results.

If one or both of the specimens fail, the Installer shall take additional test samples 10 feet from the point of the failed test in each direction and repeat the field test procedure. If these additional tests fail, then the procedure shall be repeated until the length of the poor quality seam is established. If the initial field tests pass, the second type of sample shall be taken between the passing specimens. The second sample type shall be approximately 42 inches long and 12 inches across. The sample shall be divided into three equal sections and distributed and tested as follows:

- one sample - Manufacturer/Installer for their use
- one sample - CQA Monitor for destructive testing
- one sample - CQA Monitor for site archives

Each sample shall be subject to the following destructive tests at an independent CQA Geosynthetics Laboratory or at the CQA Site Office and tested per ASTM D6392 with appropriate calibrated equipment:

- seam shear strength (five tests)
- seam peel strength (five tests)

For fusion seams, one peel strength test refers to testing of both sides of the seam.

Failed destructive tests shall be subject to additional testing until the failing test is bound. The Installer shall take another test sample 10 feet from the point of the failed test in each direction and repeat the field test procedure. If subsequent tests fail, then the procedure is repeated until the length of the poor quality seam is established. Once the field tests have passed, a second sample shall be taken between the passing specimens and tested by the Independent CQA Laboratory or by the CQA Engineer. Failed seams shall be tracked according to the welding

apparatus and the machine operator. All failed seams shall be bounded by locations from which passing Independent CQA Laboratory tests have been taken.

The Installer shall be responsible for patching all areas cut for test samples in accordance with the Technical Specifications and the Manufacturer's recommended procedures, and for non-destructive testing (e.g., vacuum box, etc.) of the patch seams. The CQA Monitor shall record all test locations, results, actions taken in conjunction with destructive test failures, and repairs.

Repairs - The CQA Monitor shall observe and document that all repair materials, techniques, and procedures used for repairs are approved in advance and meet the requirements of the Technical Specifications. The CQA Monitor shall verify that all repairs are marked, recorded, repaired, tested, and that wrinkles are addressed, prior to being covered by other materials; and that repairs are performed as specified, including specified type of repair according to type of damage and proper patch size or dimension. The CQA Monitor shall record defects and repairs on a repair log forms.

Acceptance - The CQA Engineer shall accept areas of the geomembrane prior to coverage of the geomembrane by other materials. Acceptance of areas shall follow these procedures:

- As-built panel layout survey
- Full documentation of all seams
- Full documentation of nondestructive testing on all seams and repairs
- Full documentation of repairs on all defects
- Full documentation of passing destructive tests
- A final "walk-over" of the area to observe any subsequent damages or non-addressed items

4.3.2 Geotextile

During geotextile installation, the CQA Monitor shall observe and document deployment, adequate overlap, seaming, and repairs to evaluate whether the installation is in accordance with the Technical Specifications.

Deployment - The CQA Monitor shall verify that the underlying layers are clean and free of deleterious materials prior to deployment, and anchoring is achieved as specified. The CQA Monitor shall make observations to inspect for the presence of damaged material or the presence of broken needles used in the manufacturing process.

Seams - The CQA Monitor shall verify sufficient overlap and that the specified seam procedures are followed as required in the Technical Specifications.

Repairs - The CQA Monitor shall verify that all repairs are performed in accordance with Technical Specifications.

Protection – The CQA Monitor shall verify that deployment methods and equipment do not damage underlying materials. The CQA Monitor shall observe and document that all geotextile materials are covered with the approved material and that traffic or hauling equipment does not damage them during installation of the overlying materials. In the presence of wind, the geotextile shall be securely anchored with sandbags or equivalent.

4.3.3 Geocomposite

During geocomposite installation, the CQA Monitor shall observe and document deployment, adequate overlap, seaming, and repairs to evaluate whether the installation is in accordance with the Technical Specifications.

Deployment - The CQA Monitor shall verify that the underlying layers are clean and free of deleterious materials prior to deployment, and that anchoring is achieved as specified.

Seams and Repairs - The CQA Monitor shall verify sufficient overlap and that the specified seam procedures are followed as required in the Technical Specifications. The CQA Monitor shall verify that all repairs are performed in accordance with Technical Specifications.

Protection – The CQA Monitor shall verify that deployment methods and equipment do not damage underlying materials. The CQA Monitor shall observe and document that all geocomposite materials are covered with the approved material and that traffic or hauling equipment does not damage the geocomposite during installation of the overlying materials. In the presence of wind, the geocomposite shall be securely anchored with sandbags or equivalent.

4.3.4 Geosynthetic Clay Liner

During geosynthetic clay liner (GCL) installation, the CQA Monitor shall observe and document deployment, adequate overlap, and repairs to evaluate whether the installation is in accordance with the Technical Specifications.

Deployment – The CQA Monitor shall verify that the underlying layers are clean and free of deleterious materials prior to deployment, anchoring is achieved as specified, specified methods are used to minimize wrinkles, panels are oriented properly, and stacking procedures are performed according to the Technical Specifications.

Seams and Repairs – The CQA Monitor shall verify sufficient overlap and that the specified seam procedures were followed as required in the Technical Specifications. The CQA Monitor shall verify that all repairs are performed in accordance with Technical Specifications.

Protection – The CQA Monitor shall observe and document that all GCL materials are promptly covered with the overlying HDPE geomembrane the same day in which the GCL is deployed.

4.3.5 HDPE Pipe and Fittings

During polyethylene pipe installation, the CQA Monitor shall observe and document that the installation is in accordance with the Technical Specifications. Monitoring shall include:

Placement - Observation that the handling procedures used do not damage the pipe or underlying materials, backfill is placed in accordance with the requirements of the Technical Specifications so as not to damage the pipe, any foreign material is removed from the interior of the pipe, and indentations on the pipe are within the allowable limits.

Joints and Connections - Monitoring of the jointing and connection operations to verify that the Contractor or Installer follows the Technical Specifications and the Pipe Manufacturer's recommendations, verification that the pipes are clean when installed, and that perforated sections of pipe are aligned properly prior to connection.

Non-destructive Testing - Observe any required testing of the pipe to verify accordance with the Technical Specifications.

4.3.6 Electrical Leak Location Survey

An electrical leak location survey (ELLS) shall be completed for the primary geomembrane. In areas designated for ground wood operations layer, The ELLS shall be performed on top of LCRS gravel prior to any groundwood placement. In areas designated as soil operations layer, the ELLS shall be performed on top of the operations layer soil using the dipole method per ASTM D7007. The CQA Engineer/Monitor shall ensure that the liner is properly prepared for the ELLS prior to conducting the test

In the event the ELLS identifies anomalies that are potentially indicative of a defect in the liner system, the CQA Monitor shall document the location of the suspect area, and then observe and document the exposure of the liner system and any subsequent repairs that may be necessary. The CQA Monitor will photograph the area after it is exposed, and after any repairs are completed.

The ELLS Surveyor shall submit a report detailing the procedures used and the results of their survey.

5.0 DOCUMENTATION

An effective Quality Assurance program depends on thorough monitoring and documentation of all construction activities during all phases of construction. Documentation shall consist of daily record keeping, construction problem resolutions, design and specification changes, photographic records, weekly progress reports, chain of custody forms for test sample tracking, and a certification and summary report. During construction, all documentation shall be kept on site and will be available for review by the Project Manager, CQA Engineer, or CQA Monitors.

No section of the liner system may be covered up until the CQA Monitor or CQA Engineer observes, approves, and documents the completed section of the liner system and assures that all requirements have been met by the Contractor or Installer.

5.1 Daily Record Keeping

Daily records shall consist of field notes, observation and testing data sheets, summary of the daily meetings with the Installer and Contractor, and reporting of construction problems and resolutions. This information shall be submitted weekly along with a weekly CQA Summary Report to the CQA Engineer. Copies of all CQA documentation shall be maintained at the site and be made available for review by the Project Manager.

5.2 Soils Observed and Testing Data Sheets

Soils observation and testing data sheets generally include the following information:

- Date, project name, location, and weather data
- A reduced-scale site plan, or full-scale plots, showing work areas and test locations
- Descriptions of ongoing construction
- Summary of test results and samples taken, with locations and elevations
- Off-site materials received including quarry certificates
- Test equipment calibrations, if necessary
- Signature or initials of the CQA Monitor

5.3 Geosynthetic Observation and Testing Forms

Geosynthetic observation and testing forms generally include the following information:

- Date, project name, location, and weather data
- Identification of panel or seam number
- Numbering system identifying test or sample number
- Location and identification of repairs and date of repair
- Length and/or thickness measurements for geosynthetic panels or seams
- Welding machine temperatures and settings
- Welding machine and technician identifications
- Location of tests and test results
- Identification of testing technicians and time of tests

- Signature or initials of the CQA Monitor

5.4 Construction Problem and Resolution Documentation

Any construction problem which cannot be resolved between the Installer, Contractor, and CQA Monitor may require a special meeting in order to resolve the problem. The problem should be discussed with the Project Manager and CQA Engineer, and also the Design Engineer if a design issue is involved. Specific written documentation of that problem should be prepared, if warranted, and will generally include the following information:

- Detailed description of the problem
- Location and cause of the problem
- How and when the situation or deficiency was identified
- How the problem was resolved
- Any measures taken to prevent similar problems in the future
- Signature of the CQA Engineer and CQA Monitor

Copies of all Construction Problem and Resolution Sheets requiring a Resolution Meeting will be submitted to the Project Manager.

5.5 Photo Documentation

All phases of construction shall be sufficiently photographed by the CQA Monitor. Photographs shall be identified by separate photographic log by location, time, date, and name of the person taking the photograph. A camera that records the time and date shall be used. Representative photographs will be included in the certification report.

5.6 Design and Specification Changes

If it is necessary to address design and specification changes, modifications, or clarifications during construction, the CQA Monitor or CQA Engineer will inform the Project Manager, who will notify the Design Engineer. Design and specification changes shall only be made with written agreement from the Project Manager and Design Engineer. Design and specification changes will be documented via redlined as-built drawings and redlined specification sections and will be included as appendices in the certification report.

5.7 Certification Report

At the completion of construction, a certification report shall be prepared and signed by the CQA Engineer to certify that the work has been performed in compliance with the Design Drawings and Technical Specifications and will contain the following general information:

- Summary of construction activities

- Observation and test data summary sheets
- Sampling, testing locations, and test results
- A description of significant construction problems and the resolution of these problems
- Changes to the Design Drawings or Technical Specifications and the justification for these changes (with appendices of redlined as-built drawings and redlined specifications, as necessary)
- Record drawings
- A certification statement signed and sealed by a civil engineer (PE) or engineering geologist (CEG) registered in the State of California, by whom the CQA activities were supervised and work performed in responsible charge

The as-built record drawings shall be prepared by the CQA Surveyor and shall accurately locate all construction items including the lines, grades, and thickness of all soil components for the liner system.



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