

ADDENDUM NO. 01

Date of Addendum: August 25, 2022

Project: Old Los Banos Landfill
Owner: City of Los Banos
Bid Date: September 1, 2022 at 2:00 p.m.
To: Prospective Bidders
From: City of Los Banos
Public Works Department
411 Madison Ave.
Los Banos, CA 93635

- 1. This Addendum forms a part of the Bidding Documents and will be incorporated into the Contract Documents, as applicable. All other conditions of the Contract Documents remain unchanged. The following changes, additions, or deletions as set forth herein shall apply to the Contract Documents and shall be made a part thereof and shall be subject to all the requirements thereof as though originally shown and/or specified.
- 2. The Contract Documents are hereby modified to affect the following changes:
 - a. The successful bidder of this project shall have the following current and active California State Contractor’s Licenses at the time of the submission of the bid and throughout the duration of the contract: Engineering Class A or a C-12, HAZ Specialty Classification, and licensed hazardous waste hauler for transportation of remaining soil waste material.
 - b. The attached Section -02227A is to replaced Section – 02227 in its entirety.
- 3. Bids shall be submitted in accordance with this Addendum. All Bidders MUST acknowledge receipt of this Addendum by signing and returning this Addendum with your Bid.

City of Los Banos

Firm Name: _____

By: _____

Title: _____

By: Sokniorn Than, PE

Date: _____

SECTION – 02227A

LOW-HYDRAULIC-CONDUCTIVITY LAYER USING AMENDED ON-SITE MATERIAL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section includes furnishing and installing Low-Hydraulic-Conductivity Layer (LHCL) for the side slope and for the floor using amended on-site materials.

1.2 RELATED SECTIONS

- A. Section 02110 – Clearing, Grubbing, and Stripping.
- B. Section 02219 – Stockpiling and Soil Management.
- C. Section 02221 – Excavating.
- D. Section 02228 – Engineered Fill.
- E. Section 02225 – Subgrade Preparation.
- F. Section 02226 – Foundation Layer.
- G. Section 02229 – Erosion-Resistant Layer.

1.3 REFERENCES

- A. ASTM D 1556 - Standard Test Method for determining soil density, Sand Cone Method.
- B. ASTM D 1557 -- Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. ASTM D 2216 - Standard Test Method for determining water content of soil aggregate mixtures.
- D. ASTM D 2434 -- Standard Test Method for Permeability of Granular Soils (Constant Head).
- E. ASTM D 2487 -- Classification of soils for engineering purposes (Unified Soil Classification System).
- F. ASTM D 2922, ASTM D 3017- Standard Test Method for determining soil moisture and density by Nuclear Method.

PART 2 PRODUCTS

2.1 LOW-HYDRAULIC-CONDUCTIVITY LAYER

- A. Soil obtained from on-site excavations or in place native soils.
- B. Free of organic material.
- C. Soil having a maximum particle size of 1/2 inch.

- D. Free of frozen material, ice, snow, or excessive moisture.
- E. Western Clay powdered bentonite, or equivalent, to attain a hydraulic conductivity value of less than 1×10^{-6} centimeters/second.

PART 3 EXECUTION

3.1 PREPARATION

- A. Contractor to perform a pre-survey of excavation to verify that the proper grades have been achieved and set required lines, levels, contours, and datum by construction staking for the engineered soil foundation layer.
- B. ENGINEER to examine and test the soils within the excavation to determine the acceptability and limits of the areas that must be excavated to remove unsuitable materials and replace with suitable materials meeting Part 2 of these specifications.
- C. Notify utility company to locate utilities, if applicable.
- D. Provide for dust control.
- E. Protect benchmarks, existing structures, and fences from excavation equipment and vehicular traffic.
- F. Coordinate operations with OWNER operations.
- G. Provide for dewatering as necessary for finish excavation and place fill.
- H. For the engineered soil foundation layer, proof-roll underlying native soil in the presence of the OWNER or CQA Consultant with a heavy rubber-tired vehicle (loaded water truck, loaded scraper etc.) or other approved equipment to ensure a relatively firm and unyielding condition is present prior to soil placement.
- I. Remove loose or soft soils and replace with engineered fill (or soil foundation layer materials) or process and compact soils in place to ensure that a relatively firm and unyielding condition is present prior to placement of the engineered foundation layer soil. Any fill in excess of one foot shall be compacted to a minimum of 90 percent relative compaction as determined by ASTM D 1557.
- J. Begin LHC Layer only when underlying soil has been accepted by the OWNER in writing.

3.2 LOW-HYDRAULIC-CONDUCTIVITY LAYER PLACEMENT

- A. Excavate from the approved borrow area, transport, screen, process.
- B. Place in lifts not exceeding the maximum depth of mixing equipment in loose thickness.
- C. Apply Western Clay powdered bentonite uniformly spread over the work area to achieve a minimum mix design of 3 percent Clay by dry weight. The design spread rate is 3.3 pounds/square foot (for 12 inches mix depth), which is based on a dry soil weight of 108 pcf.
- D. The spreader speed shall be controlled based on the pan test speed to maintain a steady application rate of between 3.2 to 4 pounds/square foot.

- E. The spread rate should not exceed the area which can be initially mixed, uniformly moisture conditioned and compacted within one working day.
- F. The LHC layer material shall be uniformly mixed at least twice to the specified depth of 12 inches. Mix until the mixture is visibly uniform with no streaks or pockets of powdered clay. Water to be added must be sufficient to produce a workable material moisture content to at or above optimum, within 2 percent of optimum, as determined by ASTM D1557. Mixing shall occur in a series of parallel lanes of convenient width and length. Mixing of adjoining lanes shall overlap the previous lane by at least 6 inches, but no more than 1 foot, to provide continuity. Where the mixing drum stops at the end of a lane, the position of the drum shall be marked and a subsequent lane on that longitudinal alignment shall start a least 2 feet behind the mark.
- G. Compact each lift to a minimum of 93 percent relative compaction at a moisture content within 2% of optimum as determined by ASTM D 1557. Completed lifts of fill cannot yield excessively under equipment loads.

3.3 FIELD QUALITY CONTROL

- A. The CQA REPRESENTATIVE will determine optimum moisture content and maximum density for all engineered soil foundation layer materials in accordance with ASTM D 1557.
- B. In-place density and moisture content will be determined by one or more of the following methods or approved equal: ASTM D 2922, ASTM D 1556, ASTM D 2216, and ASTM D 3017.
- C. The OWNER may perform sampling and grain size analysis of the existing soils and excavated materials as they are removed and stockpiled.
- D. Cooperate fully with the OWNER in performance of sampling and gradation testing.
- E. The CQA REPRESENTATIVE will observe placement of the material to ensure that all work is performed in accordance with the following table. Additional testing may be performed as necessitated by field conditions or as determined by the Owner's representative.

Quality Control Testing Requirements

Measurement	Standard	Frequency	Acceptance Criteria¹
Grain Size Analysis	ASTM D 422	1 per 10,000 yd ³	D ₁₀₀ < 1.0 in and Open Graded
Certificate of Compliance for LHCL ¹	USEPA Test Method 9100	1 per 5,000 yd ³	K < 1.0 x 10 ⁻⁶ cm/s
In-Place Moisture Density (Nuclear Method)	ASTM D 2922/3017	4 per 1,000 yd ³ (Min. 4 per day)	In-place dry density >93% or value to obtain Low-Hydraulic Conductivity requirement.
Moisture Density Compaction Curve	ASTM D 1557	1 per 5,000 yd ³ (Min. 1 per week)	N/A
Atterberg Limits	ASTM D 4318	1 per 5,000 yd ³ (Min. 1 per week)	N/A
Soils Classification	ASTM D 2487	1 per 5,000 yd ³ (Min. 1 per week)	N/A
Soils Classification (Visual-Manual Procedure)	ASTM D 2488	1 per Day per Source	N/A

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Low Hydraulic Conductivity Layer shall be measured by the cubic yard (CY). Measurement will be made by field survey of the perimeter of floor area containing the Haul and Place Engineered Low Hydraulic Conductivity and multiplying by the neat line thickness shown on the drawings and described in these Specifications.

4.2 PAYMENT

- A. Payment for Low Hydraulic Conductivity Layer includes all costs to excavate, screen, load, transport, place, process, moisture condition, compact, and finish grade as described in this Section, and as shown on the Construction Drawings.
- B. Payment also includes all items incidental to the Work including but not limited to:
 - 1. Dewatering and protecting the work area.
 - 2. Dust control.
 - 3. Temporary erosion control.
 - 4. Material samples, sampling, and testing.

5. Layout surveying.
6. Rejected material removal, re-testing, handling, and repair.
7. Mobilization and demobilization.
8. Finish Grading.

END OF SECTION