

**PROJECT MANUAL
TAOS REGIONAL LANDFILL
CELL 5 CONSTRUCTION**

TAOS, NEW MEXICO



PREPARED FOR:

THE TOWN OF TAOS
AS FISCAL AGENT FOR THE TAOS REGIONAL
LANDFILL

January 2026

**Bid Open Date: Friday, February 20, 2026
Bid Time: 2 P.M.**



Souder, Miller & Associates
Engineering ♦ Environmental ♦ Geomatics

2904 Rodeo Park Drive East, Building 100 ♦ Santa Fe, NM 87505
505.473.9211 ♦ fax 505.471.6675 ♦ www.soudermiller.com

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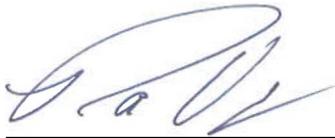
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OWNER CERTIFICATION

These Contract Documents and Construction Specifications for the **Taos Regional Landfill** in Taos New Mexico were reviewed by:

The Town of Taos, New Mexico
Taos Municipal Building
400 Camino de la Placita
Taos, NM 87571-6402

The technical material and data contained in the specifications were reviewed by Reynold Vasquez, Public Works Director, whose signature of approval of these Contract Documents and Construction Specifications can be found below.



1-23-26

Reynold Vasquez

Date

ENGINEER OF RECORD SEAL PAGE

ENGINEER OF RECORD:

Michael J. Pretti, P.E.
Principal
Souder, Miller & Associates
5610 Ward Road, Suite 130
Arvada, CO 80002
303.239.9011

The technical material and data contained in the specifications were prepared under the supervision and direction of Michael J. Pretti, P.E., whose seal as a Professional Engineer licensed to practice in the state of New Mexico is affixed below.

All questions about the meaning of intent of these documents shall be submitted only to the Engineer of Record stated above, IN WRITING for interpretations.



January 19, 2026
Date

25086
License Number

LEGAL NOTICE

The Town of Taos (Owner) is requesting Sealed Bids for the construction of the following Project:

**Taos Regional Landfill Construction of Cell 5
Town of Taos Project #: 25-26-02 / Release Date: January 23, 2026**

Bids for the construction of the Project will be received electronically via the Town's online procurement portal (Cobblestone), until 2:00 p.m. (Local Time), February 20, 2026 at which time the Bids opened in Room 109 of Taos Town Hall, 400 Camino de la Placita, Taos, New Mexico 87571.

The project includes the following Work:

The Town of Taos is soliciting bids for the construction of solid waste disposal Cell 5 at the Taos Regional Landfill. This project includes excavation, grading, installation of a geosynthetic clay liner (GCL), HDPE geomembrane line, geotextile, leachate collection and conveyance system, and protective soil layer.

The Town of Taos uses Cobblestone for procurement. For a complete set of Plans, Specifications, and Contract Documents, and to submit bids and receive amendments to this request, if applicable, Bidders must register with Cobblestone. The vendor portal link is:

<https://taosnm.cobblestone.software/gateway/>.

All official notifications, addenda, and other Bidding Documents will be offered only through Cobblestone. Neither Owner nor the Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated issuing office.

A **MANDATORY** PRE-BID MEETING will be held at the Public Works Department Conference Room, at 1030 Dea Lane, Taos, NM 87571, on **Thursday, January 29, 2026, at 2:00 p.m.** Every entity or firm that has requested a bid package will be invited by email to attend the meeting. Bids will not be accepted from Bidders that do not attend the Mandatory Pre-Bid Meeting. Contractor questions will be accepted, in writing, by Wednesday, February 4, 2026; questions will be answered no later than Friday, February 11, 2026.

Instructions to Bidders

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders included in the Bidding Documents.

By Order of the Governing Body
Town of Taos
Lisa Baca-Medina
Chief Procurement Officer
Published:
The Albuquerque Journal

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office* – The office from which the Bidding Documents are to be issued.
 - B. *Base Bid* – Amount stated in the Bid as the sum for which the Bidders offers to perform the work, excluding alternate Bids.
 - C. *Alternate Bid* – Amount stated in the Bid as the sum to be added, subtracted, or substituted from the amount of the Base Bid if the corresponding change in the project scope, materials, and/or methods of construction is awarded by the Owner.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.
- 2.04 Bidding documents in electronic media format are furnished to bidding contractors for the sole purpose of preparing bids and not for construction. The selected construction contractor shall not rely on files provided in electronic media format for construction, but rather the hard copies of such data provided by the Engineer or Owner upon award of the Contract shall be utilized for construction.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 Prior to bidding on the Project, Bidder must carry all licenses required under New Mexico state law to complete the Work and be duly registered with the New Mexico Department of Workforce Solutions with an “Active” status. Refer to Title 14 Housing and Construction of the New Mexico Administrative Code (NMAC), Chapter 6, Part 6, for a listing of classifications of licenses and certificates issued by the Construction Industries Division (CID) of the New Mexico Regulation and Licensing Department required by law to perform the Work. All Subcontractors must carry all licenses required under New Mexico state law to complete the work which they are to perform. Bidder and all Subcontractors must be properly licensed according to the requirements of the Construction Industries Licensing Act, Chapter 60, Article 12 NMSA 1978 and ensure that such licenses shall remain in effect for the duration of the Work and warranty periods. All tiers of Subcontractors whose portion of the Work is valued at greater than \$60,000 must also be duly registered with the New Mexico Department of Workforce Solutions prior to submittal of Bid, as discussed below in Article 24. All electrical work, whether performed by Bidder or Bidder’s Subcontractor, shall be performed by a licensed electrician.
- A. To demonstrate Bidder’s qualifications to perform the work, the bidder determined to have presented the lowest qualified Bid shall complete and submit the Bidder’s Qualification Statement included in the Project Manual along with all supporting data together with the

Bid, which will be used in the evaluation of the bid prior to Award, as stipulated in Article 19 of these instructions to Bidders. The bidder may be considered non-responsive if the Bidder's Qualifications Statement is not submitted in a timely manner.

- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. The Supplementary Conditions identify:
 - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
 - 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
 - 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
 - 4. Geotechnical Baseline Report: The Bidding Documents contain a Geotechnical Baseline Report (GBR). The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.

The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.

Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A Mandatory Pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price and in the form of a certified check or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 If a List of Proposed Subcontractors is identified as a required attachment to the Bid Proposal, the Bidder is required to identify all Subcontractors whose subcontracted work surpasses the Subcontractor listing threshold of five thousand dollars (\$5,000). Firms identified in the List of Proposed Subcontractors shall not be substituted except as permitted under 13-4-36 NMSA 1978 of the Subcontractors’ Fair Practices Act.
- 12.02 If the Bidder fails to specify a Subcontractor in excess of the listing threshold, the Bidder represents that the Bidder, as the prime Contractor, is fully qualified to perform that portion of the Work. For each such listed Subcontractor, the Bidder shall include the following information:
- A. the name of Subcontractor that will perform work or labor or render service on the project identified in the Contract Documents and the city or county of its principal place of business; and
 - B. the category of the work that will be done by each Subcontractor; only one Subcontractor may be listed for each category of work as defined by the Bidder.
- 12.03 Contractor shall not substitute any person as Subcontractor in place of those identified on the List or Proposed Subcontractors without prior approval from Owner. (§ 13-4-36 NMSA 1978) The same applies to equipment manufacturers identified on the Equipment Suppliers List, when such a list is included in the Project Manual.
- 12.04 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly

in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

- 12.05 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.06 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work: any Subcontractor performing work in excess of the threshold amount of \$5,000.
- If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, without an increase in Bid Price.
- 12.07 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.
- 12.08 Refer to Article 25 of these Instructions to Bidders for bonding requirements of Subcontractors as per the Subcontractors Fair Practices Act (§ 13-4-37).

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder’s name and official address.

- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

NOTE(S) TO USER:

Some lettings may be based exclusively on unit prices. As noted, following Paragraph 14.01 above, it is also common for bid forms to be structured to require lump sum prices for specified portions of the Work, and unit prices for other Work items. Unit prices on select items can also be used in combination with other pricing methods such as cost-plus-fee; see Article 5 of EJCDC® C-525, Agreement between Owner and Contractor for Construction Contract (Cost-Plus).

14.02 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

15.01 **The Town of Taos will only accept electronic Bids.** Bidders can access active procurements at the following website:

<https://taosnm.cobblestone.software/gateway/>

- A. Complete bid documents as required by the ITB Specifications and submit any required documentation, supporting materials, certificates, etc., in addition to the bid documents and Bid Table.
1. Electronic submissions through Cobblestone at the following website: <https://taosnm.cobblestone.software/gateway/>
 2. Bids will be time-stamped in the system when Bidder uploads all of the required documents
 3. Such electronic submissions will be considered sealed bids in accordance with the statute.
 4. If an amendment is processed after the bid is submitted, Bidders must resubmit their bid for it to be considered fully submitted. Note: The Bidder's responsibility is to ensure bids are correct and accurate before submission. By bidding electronically, you acknowledge any and all amendments, and your responsibility is to ensure your bid corresponds with any amendments.

*The Bidder is responsible for ensuring all documents are completely uploaded and submitted electronically via the Cobblestone system by the deadline set forth in this ITB. The Cobblestone system will automatically cease uploading data at the date and time of the deadline. Please ensure that you, as the Bidder, **allow adequate time for large uploads and fully complete your submittal by the deadline.** A submission that is not both: (1) fully complete; and (2) received via the Cobblestone system by the deadline will be deemed late. Further, a submission that is not fully complete and received via the Cobblestone system by the deadline because the response was captured, blocked, filtered, quarantined, or otherwise prevented from reaching the proper destination server by any anti-virus or other security software will be deemed late. In accordance with the statute and rule, **NO LATE BID CAN BE ACCEPTED.***

15.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a

material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 All conditions and stipulations regarding 'Competitive sealed bids; receipt and acceptance of bids,' included in the Procurement Code of the State of New Mexico shall apply. (NMSA 1978 13-1-105)

19.02 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.03 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.04 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.05 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

19.07 If the Contract is to be awarded, Owner will award the Contract with reasonable promptness by written notice to the lowest Bidder. (NMSA 1978 13-1-108)

19.08 All stipulations and conditions included in the Procurement Code of the State of New Mexico (NMSA 1978 13-1-172 through 13-1-176) regarding procedures related to protests in connection with the solicitation of award of the contract shall apply.

- 19.09 A bid submitted by a resident contractor that has a valid resident business certificate issued by the taxation and revenue department pursuant to §13-1-22 NMSA 1978 (as amended) but does not include a resident veteran business, shall be deemed five percent (5%) lower than the Bid actually submitted, pursuant to §13-1-21 NMSA 1978 (as amended). When a joint bid or joint proposal is submitted by both resident and nonresident contractors, the resident contractor preference provided shall be reduced in proportion to the percentage of the contract, based on the dollar amount of the goods or services provided under the contract, that will be performed by a nonresident contractor as specified in the joint bid or joint proposal.
- 19.10 A Bid submitted by a resident veteran contractor that has a valid resident veteran business certificate issued by the taxation and revenue department pursuant to §13-1-22 NMSA 1978 (as amended), shall be deemed between seven percent (7%) and ten percent (10%) lower than the Bid actually submitted, pursuant to § 13-1-21 NMSA 1978 (as amended). When a joint bid or joint proposal is submitted by a combination of resident veteran, resident or nonresident contractors, the preference provided pursuant to § 13-1-22 NMSA 1978 shall be calculated to the proportion to the percentage of the contract, based on the dollar amount of the goods or services provided under the contract, that will be performed by each contractor as specified in the joint bid or joint proposal.
- 19.11 The resident contractor preference and resident veteran contractor preference shall not be awarded together. If the resident veteran contractor preference applies, it shall be in place of the 5% resident contractor preference.
- 19.12 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instructions to Bidders, is lowest, after any preference percentage is considered.

ARTICLE 20 – BONDS AND INSURANCE

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – SALES AND USE TAXES

- 22.01 Bid price shall not include state gross receipts or local options taxes. Taxes will be included in the Contracted Amount at prevailing rates as a separate item to paid by Owner.

ARTICLE 23 – RETAINAGE

- 23.01 No retainage will be held on the project.

ARTICLE 24 – NEW MEXICO DEPARTMENT OF WORKFORCE SOLUTIONS REGISTRATION

- 24.01 A Bidder that submits a Bid valued at more than sixty thousand dollars (\$60,000) must be registered with the Labor Relations Division, New Mexico Department of Workforce Solutions (NMDWS), Public Works Bureau, with an “Active” status, prior to submittal of Bid. The Bidder must enter his NMDWS registration number on the Bid Form and include a copy of the registration with the NMDWS as per Article 15 herein. The Bid presented by a Bidder who does not meet this requirement shall not be considered for award, pursuant to NMSA 1978, Section 13-4-13.1.
- 24.02 All tiers of Subcontractors shall be subject to this same requirement. The Bidder must also enter the Labor Relations Division, New Mexico Department of Workforce Solutions (NMDWS), Public Works Bureau registration number on the List of Proposed Subcontractors for each Subcontractor when the value of the subcontracted work will exceed sixty thousand dollars \$60,000, as stated above. Any Subcontractor who lacks current registration, with an “Active” status, with NMDWS as of the date of Bid will be rejected, and the General Contractor will be required to substitute another registered Subcontractor acceptable to the Owner without any increase in Bid price.

ARTICLE 25 – SUBCONTRACTORS FAIR PRACTICES ACT

- 25.01 The Subcontractors Fair Practices Act (SCFPA) requires that Payment and Performance Bonds be prepared and presented by the prime Contractor and first-tier Subcontractors only. The Subcontractor’s bonds are to be payable to the prime Contractor, not the Owner.
- 25.02 The Performance and Payment bond provided by an affected Subcontractor should follow current law in the SCFPA (§ 13-4-37 NMSA 1978) that is:
- A. Be issued by a corporate surety authorized to do business in New Mexico in accordance with the New Mexico Insurance Code;
 - B. Be a surety listed in the US Treasury Circular 570;
 - C. Name the prime Contractor as the obligee.
- 25.03 Pursuant to NMSA 1978, Section 13-1-148.1, a Subcontractor shall provide Performance and Payment Bonds if the Subcontractor’s contract (to the Contractor) for work to be performed is one hundred twenty-five thousand dollars (\$125,000), or more. Failure of a Subcontractor to provide the required bonds shall not subject Owner to any increase in cost due to approved substitution of Subcontractor.
- 25.04 The Performance and Payment Bond required shall be provided to the general Contractor at the time the subcontract is executed. The Performance and Payment Bond is at the expense of the Subcontractor and should clearly state the amount and requirements of the bond. (§ 13-4-37 NMSA 1978)

ARTICLE 26 – RESIDENT BIDDERS’ PREFERENCE

- 26.01 It is the duty of every office, department, institution, board, commission, or other governing body or office thereof of this state or of any political subdivision thereof to award all contracts for the construction of public works or for the repair, reconstruction, including highway reconstruction, demolition, or alteration thereof, to a resident contractor whenever practicable. (§13-4-37)

ARTICLE 27 – VETERAN BIDDERS’ PREFERENCE

27.01 It is the duty of every office, department, institution, board, commission, or other governing body or office thereof of this state or of any political subdivision thereof to award all contracts for the construction of public works or for the repair, reconstruction, including highway reconstruction, demolition, or alteration thereof, to a veteran contractor whenever practicable. (§13-4-37)

ARTICLE 28 – NEW MEXICO STATE PROCUREMENT CODE

28.01 The procurement Code, Sections 13-1-28 through 13-1-199 NMSA 1978, imposes civil and misdemeanor criminal penalties for its violation. In addition, the New Mexico criminal statutes impose felony penalties for bribes, gratuities, and kickbacks.

BID FORM

Taos Regional Landfill – Construction of Cell 5

Bid Number 25-26-02

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Town of Taos
Attention: Lisa Baca-Medina, Chief Procurement Officer
400 Camino De La Placita
Taos, NM 87571
(575) 751-2029

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum Date</u>	<u>Addendum No.</u>	<u>Addendum Date</u>

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder’s safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the

Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Note: Gross receipts tax not included.

Base Bid – Cell 5 Construction

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL PRICE
1	Mobilization/Demobilization	LS	1	\$	\$
2	QA/QC Compaction Testing Allowance	Allow.	1	\$31,200	\$31,200
3	Surveying Services	Allow.	1	\$28,080	\$28,080
4	Stormwater Pollution Prevention Plan	LS	1	\$	\$
5	Cell 5 Subgrade Excavation - Contactor to grade subgrade to finish subgrade design, including leachate collection line trenches and geosynthetics anchor trench excavation; remove excess material and place in designated borrow area. Subgrade surface to be smooth drum rolled for GCL installation.	CY	150,850	\$	\$
6	Cell 5 Subgrade Fill - Contractor to grade subgrade to finish subgrade design; import fill material from adjacent borrow area or use Cell 5 excavated soil.	CY	12,600	\$	\$
7	Liner (GCL) Subgrade - Contractor to rework existing soil to 6 inches below design subgrade. Subgrade soil shall be scarified, moisture-conditioned, and recompact to 90% standard Proctor Density (ASTM D698) to achieve subgrade plan elevations	CY	5,825	\$	\$
8	Geosynthetic Clay Liner (GCL) with Woven Geotextiles on Both Sides , CIP (Anchor trench, waste, overlap, or materials used for convenience are considered incidental to project and no extra payment will be made).	SF	314,600	\$	\$
9	60 mil Smooth HDPE, Floor Liner - including weld and integrity testing of the liner and anchor trench, CIP (Anchor trench, waste, overlap, or materials used for convenience are considered incidental to project and no extra payment will be made).	SF	177,540	\$	\$
10	60 mil Double-Textured HDPE, Side-Slope Liner - including weld and integrity testing of the liner and anchor trench, CIP (Anchor trench, waste, overlap, or materials used for convenience are considered incidental to project and no extra payment will be made).	SF	137,060	\$	\$
11	Leachate Collection Piping . Include pipe, coarse aggregate, and 8 oz geotextile pipe wrap.	LF	625	\$	\$
12	Leachate Collection Sump . Include all piping and fittings, riser pipe, CMP Protector Pipe, sump aggregate, and 8 oz/sy geotextile	LS	1	\$	\$
13	Install bollard posts (Including concrete)	LS	1	\$	\$

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL PRICE
14	Procurement and Installation of 2-foot soil Protective Soil Layer overlying liner. Refer to Technical Specification Section 31 05 16 Granular Materials.	CY	23,755	\$	\$
15	Construct Permanent Earth Berm, Anchor Trench, and Place Plywood Panels along Cell 5/6 Boundary	LF	815	\$	\$
16	Construct Interim Geosynthetics Termination Berm on North Slope of Cell 5	LF	400	\$	\$
17	Construction Dewatering	Allow.	1	\$10,400	\$10,400
18	Construction Water	Allow.	1	\$20,800	\$20,800
19	Trash Excavation and Disposal - Assume 1,000 cy of trash to be excavated and disposed of in the active face	CY	1,000	\$	\$

TOTAL OF BASE BID: \$ _____

TOTAL OF BASE BID IN WORDS: _____

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Alternate 1 Bid – Cell 5 Construction – Import Subgrade Material

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	TOTAL PRICE
7A	Excavation to 6 in below design subgrade, remove excess material and place in designated borrow area, procurement, and installation of select subgrade soils compacted to 90% standard Proctor Density (ASTM D698) to achieve subgrade plan elevations (import materials). Refer to Technical Specification Section 31 05 19.15 Geosynthetic Clay Liner.	CY	5,825	\$	\$

TOTAL OF ALTERNATE 1 BID: \$ _____

TOTAL OF ALTERNATE 1 BID IN WORDS: _____

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security in the form of a Bid Bond with Agent's Affidavit;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. Required Bidder Qualification Statement with supporting data;
 - E. Copy of a valid Resident Contractor Preference Certificate issued by the taxation and revenue department of the State of New Mexico (if claiming resident preference);
 - F. Copy of Veteran Preference Certification (if claiming Veteran Preference);
 - G. Copy of Registration with the Labor Relations Division, New Mexico Department of Workforce Solutions, Public Works Bureau;
 - H. Campaign Contribution Disclosure Form;

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

New Mexico Department of Workforce Solutions Registration No. _____

Is Bidder eligible for Resident Contractor Preference or Resident Veteran Contractor Preference as defined in the Instructions to Bidders?

Yes _____ Circle one: Resident Contractor Resident Veteran Contractor
No _____ Preference Preference

If yes, attach documentation of Resident Contractor or Resident Veteran Contractor eligibility

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name— Include Location*):

BOND

Bond Number:

Date:

Penal sum

\$

(Words)

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)

(Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

Signature

By:

Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest:

Signature

Attest:

Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

LIST OF PROPOSED SUBCONTRACTORS

The following listing must be completed and signed by the Bidder and submitted with the Bid Proposal. Bids submitted without this completed and signed listing or with more than one listed for each item may be considered non-responsive. The subcontractor listing threshold shall be as indicated in the Instructions to Bidders. If none of the work will be subcontracted, Bidder shall write "NONE", sign the sheet, and include with Bid to avoid being found non-responsive.

The General Contractor will determine categories of work that will be performed by the General Contractor, Subcontractors, and Tiers of Subcontractors. The following will be employed to perform the designated categories of work under this Contract.

Prior to award of the contract to the lowest qualified Bidder, the Contractor may be required to supply additional information regarding the Subcontractors listed below, as called for in the Instructions to Bidders, Bidder's Qualifications Statement, and in the technical specifications.

Contractor shall not substitute any person as Subcontractor in place of those identified on this form without prior approval from Owner. (§ 13-4-36)

Important Note Related to Public Works Projects: Contractor and all tiers of Subcontractors must be in compliance with the New Mexico Public Works Minimum Wage Act. Any Subcontractor whose work is valued at greater than \$60,000 must be registered with the Labor Relations Division, New Mexico Department of Workforce Solutions, Public Works Bureau at the time of Bid [13-4-13.1 NMSA 1978], and their registration number included below. If such registration is not in place and current as of the date of Bid, the Subcontractor will be rejected and the General Contractor will be required to substitute another Subcontractor acceptable to the Owner without any increase in Bid price.

* Category of Work	Firm Name and Business Address, Phone # and License Number of Subcontractors	** Range	NM Department of Workforce Solutions Registration No. (if applicable)

BIDDER'S QUALIFICATIONS STATEMENT

Important Note:

Completion of this statement is required of all Bidders and must be submitted together with the Bid, as stipulated in the Instructions to Bidders.

PROJECT TITLE: Taos Regional Landfill: Construction of Cell 5

SUBMITTED BY: _____
(Print or Type Name of Bidder)

ADDRESS: _____

The undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter. Use additional sheets for any responses, as necessary.

1. How many years has your organization been in business as a utilities contractor? _____

2. How many years has your organization been in business under its present name? _____

3. If a corporation, answer the following:

a. Date of Incorporation: _____

b. State of Incorporation: _____

c. President's Name: _____

d. Vice President's Name: _____

c. Secretary or Clerk's Name: _____

d. Treasurer's Name: _____

4. If individual or partnership, answer the following:

a. Date of Organization: _____

b. Name and Address of all Partners:

(State if general or limited partnership)

5. If other than corporation or partnership, describe organization and name principals. _____

6. Do you plan to subcontract any part of this Project? _____ If so, briefly describe below and identify subcontractors on the List of Proposed Subcontractors form included in these Contract Documents, that meet the listing threshold. _____

7. Has any construction contract to which you have been a party, or any subcontractor identified on the List of Proposed Subcontractors form has been a party, been terminated for convenience or for cause; have you ever been debarred from contracting with any entity, public or private; have you ever terminated work on a project prior to its completion for any reason; have you ever filed a claim for disputed work; has any owner or prime contractor to which you've provided a performance bond ever put your surety on notice of their intent to terminate; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with the contract for which they furnished a bond on your behalf; has any subcontractor or supplier ever placed a claim against your payment bond; have you been late in completing a project during the last five years resulting in the assessment of liquidated damages? If the answer to any portion of this question is "yes", please furnish details of all such occurrences including name of subcontractor (if applicable), owner, architect or engineer, and surety, and name and date of project. _____

8. Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated for convenience or for cause; been debarred from contracting with any entity, public or private; terminated work on a project prior to its completion for any reason; filed a claim for disputed work; had any surety which issued a performance bond completed the work in its own name or financed such completion or ever been put on notice of intent to terminate; or had any surety expended any monies in connection with a contract for which they furnished a bond? If the answer to any portion of this question is "yes", please furnish details of all such occurrences, including name of owner, architect or engineer, and surety, and name and date of project. _____

9. List name of project, owner, architect or engineer, contract amount, percent complete and scheduled completion of the major construction projects your organization has in progress on this date. Include name, address and telephone number of a reference for each project listed. _____

12. List the states and categories of construction in which your organization is legally qualified to do business. Include all license classifications your organization possesses in the State of New Mexico, as stipulated in the New Mexico Administrative Code (NMAC), Title 14, Chapter 6, Part 6.

13. List name, address, and telephone number of an individual who represents each of the following and who may be contacted for a financial reference.

a. A surety: _____

b. A bank: _____

c. A major material supplier: _____

14. The Owner may require the low Bidder to submit a financial statement, prepared on an accrual basis in a form that clearly indicates Bidder's assets, liabilities and net worth, plus additional information concerning past job performance such as list of last ten jobs you purchased a bond for along with name of surety on each, prior to issuance of the Notice of Award.

Dated this _____ day of _____ 20_____

Bidder: _____
(Print or Type Name of Bidder)

By: _____

Title: _____

(Seal, if Corporation)

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, Sections 13-1-28, et seq., NMSA 1978 and NMSA 1978, § 13-1-191.1 (2006), as amended by Laws of 2007, Chapter 234, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars (\$250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

“Applicable public official” means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

“Campaign Contribution” means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. “Campaign Contribution” includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

“Family member” means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

“Pendency of the procurement process” means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

“Prospective contractor” means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

“Representative of a prospective contractor” means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Name(s) of Applicable Public Official(s) if any: _____
(Completed by State Agency or Local Public Body)

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(Attach extra pages if necessary)

Signature Date

Title (position)

--OR--

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250) WERE MADE to an applicable public official by me, a family member or representative.

Signature Date

Title (Position)



PLEASE NOTE: This is a Generic Model Contract. Actual language of final contract may differ.

**TOWN OF TAOS CONSTRUCTION CONTRACT FOR
TAOS REGIONAL LANDFILL
CONSTRUCTION OF CELL 5**

This contract is hereby made and entered into by and between the **Town of Taos**, a New Mexico Municipality (hereinafter "TOWN") and _____, a contractor licensed to do business in New Mexico, hereinafter "CONTRACTOR") effective on this ____ day of _____, 2026. In accordance with NMSA 13-1-100, if this is a contract for major construction, including but not limited to roads, bridges, airports, buildings, dams, and wastewater treatment facilities, this Contract shall not become effective until the award and execution are made by the TOWN's governing body, the Town Council.

WHEREAS, in conformity with the New Mexico Procurement Code, NMSA 1978, Section 13-1-28 through 13-1-199, the TOWN caused to be issued an Invitation for Bids No. 25-26-02 for construction project entitled Taos Regional Landfill – Construction of Cell 5 and further caused a Notice or Advertisement for Bids for that project to be duly published in conformity with NMSA Section 13-1-104;

WHEREAS the CONTRACTOR timely submitted a responsive bid, and the TOWN thereafter selected CONTRACTOR as the lowest responsible bidder pursuant to NMSA Section 13-1-108;

WHEREAS, the TOWN desires to engage CONTRACTOR to provide said construction services; and

WHEREAS, CONTRACTOR desires to provide such service(s) under the terms and conditions of this contract;

THEREFORE, IT IS HEREBY MUTUALLY AGREED by and between the parties that:

1. Scope of Work. CONTRACTOR shall provide construction services and materials as required by this Contract Documents, including specifications, listed in Paragraph 12, below.
2. Address & Phone Contacts for Contractor, Design Professional, and Town.

- a. The principal contact person, address (mailing and, if different, physical location) and phone number(s) of CONTRACTOR are:

- b. The design professional with whom the Town has contracted for the design of this project is: Souder, Miller & Associates.

The design professional's principal contact person, address, and phone number are:

Scott McKitrick, P.G.
Souder, Miller & Associates
5454 Venice Avenue, NE, Ste D
Albuquerque, NM 87113
Scott.mckitrick@soudermiller.com
(505) 595-7813

- c. The Town's principal contact person for this project and his or her address and phone number are:

Reynold Vasquez, Public Works Director
1030 Dea Lane
Taos, NM 87571
rvasquez@taosnm.gov
(575) 737-2641

3. Term and Termination. CONTRACTOR's substantial completion of work under this contract shall be achieved no later than _____ days from the date the TOWN issues or approves a Notice to Proceed unless sooner terminated pursuant to the termination provision below or by completion of contracted services. The initial term of this Contract Document will be two years from its effective date. CONTRACTOR'S obligation to perform work and TOWN'S obligation to pay for work adequately performed under this Contract extends until the work is completed and final payment is made.
4. Change Orders and Amendments: An express change order or amendment shall be a simple direction by the TOWN to perform additional work, to remove work from the scope of work, or extend or shorten the time for completion of contract work. A change order or amendment will state a specific sum, certain or lump sum, if the change requires additional work, supplies, or materials from project requirements, and a specific date if the change extends or shortens the time for completion. No claims for concealed or unknown conditions, impact fees or costs, any additional fees or costs, additional services, or any other fee or cost incurred by CONTRACTOR, nor any cost or fee associated with any delay or extension of the contract herein will be assessed against the TOWN unless provided in this contract (including the Contract Documents

incorporated herein) or in a change order and approved by the TOWN. CONTRACTOR shall follow all procedures required herein or in the Contract Documents for the execution of a valid change order.

5. Compensation. The TOWN shall pay CONTRACTOR, under this contract, a maximum of _____ dollars (\$_____) plus the required Gross Receipt Tax as approved by the Town Council in accordance with NMSA Section 13-1-100. Gross Receipts Tax shall be billed at ____%. The foregoing amount is not a guarantee but is the maximum amount that the TOWN will pay for work within the scope of work that the CONTRACTOR satisfactorily performs, except that a valid amendment or change order increasing the amount may be issued by the TOWN. Payment under this Contract is subject to the “Invoices and Payment” provisions of Paragraph 6 below and contingent upon the Appropriations and Authorization provisions of Paragraph 10.
6. Invoices, Payment. CONTRACTOR must submit a detailed monthly statement (invoice) requesting payment for services performed, materials supplied and expenses incurred during the period billed for. An invoice may request payment only for services already supplied, materials already purchased, and expenses already incurred. If the TOWN finds that an invoice, materials, or expenses are not acceptable, then within thirty days after the date of receipt of the written statement from the CONTRACTOR requesting payment, it shall provide the CONTRACTOR a letter of exception explaining the defect or objection and outlining steps the CONTRACTOR must take to provide remedied action. The Town shall then pay the amount billed and certified no later than twenty-one (21) days following certification and acceptance of the charges, except that the Town may make payment within forty-five (45) days after submission of an undisputed request for payment when grant money is a source of funding for the project or method of payment is specified by federal government requirements. For late payments, the TOWN shall pay interest at a rate of one and one-half percent of the undisputed amount per month or a fraction of a month until payment is issued. (NMSA 1978, Sec. 57-28-5.)
7. No further amount(s) shall be available under this contract unless authorized by law, ordinance, regulation or resolution and embodied in a written amendment to this contract or change order executed prior to additional work being performed, additional materials being purchased, or additional expenses being incurred.
8. Release. CONTRACTOR agrees that, upon final payment of amounts due under this contract, CONTRACTOR releases the TOWN, its employees and agents from all liabilities, claims and/or obligations whatsoever arising from, or under, this contract.
9. Completion. CONTRACTOR shall deliver, to the TOWN, a completed project including all work within the scope of work of this contract, an application for a certificate of occupancy, and warranties, with quality of work conforming to all specifications in the Contract Documents and industry standards, to the TOWN’s satisfaction, no later than the submission of CONTRACTOR's final bill.

10. Appropriations. This Contract Document is contingent upon there being sufficient appropriations available and sufficient legal authority. The TOWN shall be the sole and final determiner of whether sufficient appropriations, availability and authority exist. If this contract encompasses more than one fiscal year, this contract is contingent upon continuing appropriations being available for each fiscal year.

11. Termination and Suspension.

- a. This contract entered into under it may be terminated by TOWN with or without cause. Termination shall be by written notice which shall be delivered or mailed (certified mail, return receipt) to the CONTRACTOR. Termination will be deemed to be effective thirty (30) calendar days from the date of the postmark or if notice is hand-delivered, thirty (30) days from the date of delivery to the CONTRACTOR (personally or at his/her office).
- b. If notified of termination, CONTRACTOR shall immediately cease performing services and deliver, to TOWN, any work in progress. In no event shall termination nullify obligations of either party incurred prior to the effective date of termination.
- c. Termination Management. Immediately upon any notice of termination of this Contract, the CONTRACTOR shall: 1) not incur any further obligations for salaries, services, or any other expenditure of funds under this Contract without the written approval of the TOWN; 2) comply with all directives issued by the TOWN in the notice of termination as to the performance of work under this Contract; and 3) take such action as the TOWN shall direct for the protection, preservation, retention or transfer of all property titled to the TOWN and records generated under this Contract.
- d. The TOWN may suspend work under this Contract for any reason the TOWN in its sole discretion deems sufficient, including but not limited to budgetary reasons or a need for further studies, investigation, or analysis before work continues. Notice of Suspension shall be made or confirmed in writing, which shall be hand-delivered or mailed by certified mail, return receipt requested, to CONTRACTOR. Immediately upon receipt of notice of contract suspension, CONTRACTOR shall cease work pursuant to the Contract and await further instructions from the TOWN except that, with the TOWN's permission which shall not be unreasonably denied, the CONTRACTOR may proceed with any work in progress that must be continued or completed in order to avoid damage, harm or risk to the TOWN's, the CONTRACTOR's, any subcontractor's, or the public's personnel or property. In the event that the CONTRACTOR, upon receiving a suspension of work notice, believes there is such reason for continuing work, it shall immediately so inform the TOWN and the parties shall in good faith attempt to agree on what additional work is reasonably required under the circumstances. Suspension of work shall not affect either party's obligations with respect to work done or obligations incurred before notice of contract suspension.

12. Contract Documents. This Contract Document and each contract entered into pursuant to it includes and incorporates by reference the following documents as if set forth herein: all bid documents, specifications and related documents contained in the Project Manual issued on _____ (date) for the Taos Regional Landfill – Construction of Cell 5 Project, specifically including but not limited to any and all General Conditions and Supplementary Conditions set forth in forms such as EJCDC C-700 (Standard General Conditions of the Construction Contract) or EJCDC C-800 (Supplementary Conditions); all bid documents, certificates, and forms submitted by CONTRACTOR in response to the invitation for bids; all drawings and plans for the project called for by this Contract prepared and approved by the project’s design professional, Souder, Miller and Associates, included any amendments to such drawings; and any other written contract or agreement signed hereafter by both parties in connection with this project and intended to be binding with respect to it. The documents hereby incorporated by reference are collectively referred to herein as “the Contract Documents.”
13. Federal Funding/Conflicts. If federal funds are used to pay for all or part of this Contract, the TOWN and the CONTRACTOR shall abide by all applicable federal government statutes, regulations, or valid directives in the performance of this Contract. Should there be any conflict between any provision of this Contract and such federal requirements, the federal requirements shall control. Otherwise, if there are any conflicts between this Contract and provisions of the other Contract Documents incorporated herein by reference, the provisions of this Contract shall control unless the facts and circumstances indicate otherwise, or the parties agree in writing otherwise.
14. Status of Contractor. CONTRACTOR acknowledges that it is an independent contractor and as such neither CONTRACTOR, its employees, agents or representatives shall be considered employees or agents of the TOWN nor shall they be eligible to accrue leave, retirement benefits, insurance benefits, use of Town vehicles, or any other benefits provided to Town employees.
15. Non-Agency. CONTRACTOR agrees not to purport to bind the TOWN to any obligation not assumed herein by the TOWN, unless the CONTRACTOR has express written approval and then only within the limits of that expressed authority.
16. Confidentiality. Any information learned, given to, or developed by CONTRACTOR in the performance of this contract that is of a confidential nature shall be kept confidential and shall not be made available or otherwise released to any individual or organization without the prior written approval of the TOWN.
17. Worker's Compensation. CONTRACTOR acknowledges that neither it, its employees, agents or representatives shall have any claim whatsoever to worker's compensation coverage under the TOWN's policy. CONTRACTOR and sub-contractors shall carry their own Worker’s Compensation coverage as required by law.

18. Taxes. CONTRACTOR acknowledges that it, and it alone, shall be liable for and shall pay to the New Mexico Taxation & Revenue Department, the applicable gross receipts taxes on all monies paid by the Town under this contract and that the TOWN shall have no liability for payment of such tax. CONTRACTOR also acknowledges that it, and it alone, shall be liable to the State and Federal government(s) and/or their agencies for income and self-employment taxes required by law and that the TOWN shall have no liability for payment of such taxes or amounts.
19. Records-Audit. CONTRACTOR shall keep, maintain and make available, to the TOWN, the Town's auditors, the New Mexico State Auditor, and any other agency or entity as so provided in the Contract Documents, all records, invoices, bills, etc. related to the performance of this contract for a period of three (3) years after the date of final payment. If federal grant funds are used to pay any part of this contract, CONTRACTOR shall retain all records for the period of time required by OMB Circular 102-A or any superseding federal government directive shall apply. Said records shall be available for inspection, audit and/or copying by the TOWN or its authorized representative or agent, as well as federal and/or state auditors.
20. Indemnification. CONTRACTOR shall defend, indemnify and hold harmless the TOWN from all actions, proceeding, claims, demands, costs, damages, attorneys' fees, and all other liabilities and expenses of any kind from any source which may arise out of the performance of this Agreement, caused by the negligent act or failure to act or other faults of the Contractor, its officers, employees, servants, subcontractors or agents, or if caused by the actions of any client of the Contractor resulting in injury or damage to persons or property during the time when the Contractor or any officer, agent, employee, servant or subcontractor thereof has or is performing services pursuant to this Agreement. In the event that any action, suit, or proceeding related to the services performed by the Contractor or any officer, agent, employee, servant, or subcontractor under this Agreement is brought against the Contractor, the Contractor shall, as soon as practicable but no later than two (2) days after it receives notice thereof, notify the TOWN in writing.
21. Assignment & Subcontracting. CONTRACTOR shall not assign, transfer or subcontract any interest in this contract or attempt to assign, transfer or subcontract any claims for money due under this contract without the prior written approval of the TOWN, which is hereby granted with respect to subcontractors named in the Contract Documents as to whom all relevant legal requirements are met.
22. Conflict of Interest. CONTRACTOR warrants that it presently has no interest or conflict of interest and shall not acquire any interest or conflict of interest which would conflict with the performance of services under this Contract. This warranty includes the Contractor's representation that it has no conflict of interest and will not acquire any conflict of interest as set forth in the Procurement Code, other laws of the State of New Mexico, and the Town of Taos Purchasing Policy Part XXIII or any replacement provisions.

23. Non-Discrimination and Labor Law Compliance. CONTRACTOR agrees that it and its employee(s) and/or agent(s) shall comply with all applicable federal, state and local laws and regulations regarding equal employment opportunity, fair labor standards, prevailing wages, and with any other applicable equal opportunity or labor laws.
24. Insurance. The CONTRACTOR will maintain, throughout the Project, the following types of insurance with at least at the following coverage limits and shall provide the TOWN with copies of the certificates of insurance showing coverage:
- a. Comprehensive General Public Liability Insurance (including premises operations, independent contractor's protective; products and completed operations; broad form Property Damage) as follows:

Bodily Injury:	\$1,000,000 [or \$ _____]	each occurrence
Property Damage:	\$500,000 [or \$ _____]	annual aggregate
 - b. Comprehensive Automobile Liability:

Bodily Injury:	\$1,000,000 [or \$ _____]	each occurrence
Property Damage:	\$500,000 [or \$ _____]	annual aggregate
 - c. Workers' Compensation In addition to coverage required by state statute (Workers' Compensation Act), CONTRACTOR shall maintain employer's liability as follows:

\$100,000 [or \$ _____]	each accident
\$500,000 [or \$ _____]	disease policy limit
\$100,000 [or \$ _____]	disease each
 - d. Umbrella Excess Liability \$1,000,000 [or \$ _____] over primary insurance.

The parties have agreed to the dollar amounts set forth in subparagraphs a through d above unless they cross out such a figure, substitute another figure and initial the change, or make such a mutually agreed upon change electronically.

- e. Builder's Risk Insurance CONTRACTOR shall maintain Builder's Risk Insurance (fire and extended coverage) on a 100% completed value basis on the insurable portions of the project for the benefit of the TOWN, the CONTRACTOR and all subcontractors, in proportion to their respective interests.
- f. Subcontractors' Insurance CONTRACTOR shall either require each of its subcontractors to maintain during the life of its subcontract public liability and property damage insurance in the amounts specified above or insure the activities of the subcontractors in the CONTRACTOR's own insurance policy.

In any event, CONTRACTOR shall maintain liability insurance in an amount at least equal to the liability limits set forth by the New Mexico Tort Claims Act, Sec. 41-4-19,

N.M.S.A. 1978 and all other insurance required by the Contract Documents, whichever provides greater coverage.

25. Default by Contractor. In the event that CONTRACTOR defaults on any term or provision of this contract, the TOWN retains the right to terminate the Contract or to permit the CONTRACTOR to cure the default in a manner that is reasonable under the circumstances.
26. Efforts to Cure. If the TOWN elects to provide the CONTRACTOR with notice to cure any default, deficiency or defect, the TOWN shall issue the CONTRACTOR a written "Notice to Cure" specifying the measures to be taken and the time within which they must be taken. Failure by the CONTRACTOR to cure the default, deficiency or defect, within the authorized time, may result in an immediate termination of this contract by the TOWN pursuant to Paragraph 11 above.
27. Liquidated Damages. In the event that CONTRACTOR fails to complete the project, or provide the receivables from the services provided, by the agreed upon contract substantial completion date established herein or in the Contract Documents, the CONTRACTOR shall pay to the TOWN liquidated damages in the amount of Five Hundred Dollars (\$500.00) per calendar day past the substantial completion date. Such liquidated damages are agreed to be reasonable compensation for the Town in view of the harm likely to be suffered by the TOWN for delay and the inherent difficulty or impossibility of precisely determining the specific amount of damages.
28. Different Site Conditions. The CONTRACTOR shall promptly and before the conditions are disturbed, give written notice to the Town of 1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or 2) unknown physical conditions at the site, of an unusual nature which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract. No Change Order shall be issued due to different site conditions unless the Town has fully investigated such alleged conditions based on Contractor's notice of different site conditions.
29. Severability. In the event that a court of competent jurisdiction finds that any term or provision of this contract is void or unenforceable, all other terms and provisions shall remain intact and enforceable where not otherwise inconsistent with the Court's findings.
30. Scope of Agreement. This contract (including all Contract Documents) incorporates all of the agreements and understandings between the parties. No prior agreement(s) or understanding(s), verbal or otherwise, shall be valid or enforceable unless embodied in this Contract Document or a Task Order issued under it.

31. Applicable Law. This contract shall be governed by the Laws of the State of New Mexico and the Ordinances, resolutions, rules and regulations of the TOWN. Any legal proceeding brought against the TOWN or the CONTRACTOR arising out of this contract, shall be brought in the Eighth Judicial District Court, Taos County, State of New Mexico.
32. Illegal Acts. Pursuant to Sec. 13-1-191, N.M.S.A. 1978 and the criminal laws referred to therein, it is unlawful for any contractor to engage in bribery, offer gratuities with the intent to solicit business, or offer or accept kickbacks in connection to any transaction governed by the Procurement Code. Any such acts also constitute breaches of this Contract.
33. Bonding. If this contract is for more than \$25,000, CONTRACTOR, in accordance with NMSA Sec. 13-4-18, shall purchase and maintain for the life of the project called for by this Contract, performance and payments bonds by sureties authorized to do business in New Mexico and approved by the TOWN. Each such bond shall be in an amount at least equal to 100% of the contact price and shall otherwise conform to the requirements of NMSA Sec. 13-4-18.
34. Wages. If this contract is for more than \$60,000 and CONTRACTOR will employ mechanics or laborers, CONTRACTOR shall pay at least the prevailing wages required by the New Mexico Public Works Minimum Wage Act, NMSA 13-4-11 through 13-4-17, and shall comply with the other provisions of that Statute including the requirement that the CONTRACTOR and certain sub-contractors be registered with the Labor and Industrial Division of the Department of Workforce Solutions pursuant to NMSA 13-4-13.1. If federal funds are used for the project to be undertaken pursuant to this Contract, to the extent required by federal law, CONTRACTOR shall abide by the federal Davis Bacon Act and other applicable federal laws.
35. Subcontractors. CONTRACTOR if using subcontractors on this project who will be paid \$5,000 or one half of one percent of the architect's or engineer's estimate of the total project cost, whichever is greater, shall abide by all applicable requirements of the New Mexico Subcontractors Fair Practices Act, NMSA Section 13-1-31 through 13-4-42.
36. Standards. All work under this contract shall equal or exceed applicable industry and regulatory standards related to quality, durability, and fitness for intended use.
37. Warranty. In addition to other warranties provided for in the Contract Documents or required by law, and in no way diminishing such requirements, the CONTRACTOR unequivocally warrants that its entire work shall be free from defects of materials workmanship, provided that any such defect be brought to the attention of the CONTRACTOR in writing within one (1) year after completion of the Work or after the defect was or reasonably should have been discovered by the TOWN, whichever period is later, unless a different warranty period is stipulated in the Contract Documents or provided by law.

38. Town Rights. The TOWN has the unilateral right after giving reasonable notice in writing to:
- a. Order to changes in the work within the scope of the contract;
 - b. Order temporary stoppages of work or delay performance; and
 - c. Order permissible excuses for delay or nonperformance based on the terms of this contract.
39. Compliance with Terms of Funding Documents. If part or all of the funding for the project covered by this contract is derived from a source other than the TOWN's own funds, such as loans or grants from a state or federal agency, the parties acknowledge that they are bound, in the performance of this contract by any contractual or regulatory requirements imposed by the funding agency, and hereby incorporate the terms of any such funding agreement or regulations into this contract by reference.
40. Compliance with Prompt Payment Act. The Contractor and the Town agree to comply with all applicable requirements of the New Mexico Prompt Payment Act, NMSA 1978, 57-28-1 through 57-28-11 the following:

CONTRACTOR and its subcontractors must make prompt payment to their subcontractors and suppliers for amounts owed for work performed on the construction project within seven days after receipt of payment from the Town, contractor or subcontractor. Failure to make such timely payment shall result in the contractor or subcontractor paying interest to the subcontractors or suppliers beginning on the eighth day after payment was due, computed at one and one-half percent of the undisputed amount per month or fraction of a month until payment is made. NMSA 1978, Sec. 57-28-5.C.

If applicable, **THE AWARD AND EXECUTION OF THIS CONTRACT WAS APPROVED AND DIRECTED BY THE TOWN COUNCIL OF THE TOWN OF TAOS AT ITS MEETING ON _____**, as reflected in the minutes of the meeting attached hereto as ATTACHMENT A.

IN WITNESS HEREOF, the parties have executed this Agreement as of the date of the signature of the last party to sign.

TOWN APPROVAL

CONTRACTOR:

Mayor Dan Barrone

Contractor

Date signed

Printed Name:

Title or Position: _____

Contractor's GRT/CRS Number OR

Contractor's Fed. Tax ID No. or SSN

Date signed

ATTESTED TO BY:

Denise Martinez, Town Clerk

ACCOUNTING APPROVAL:

APPROVED AS TO FORM:

Johnathon Montoya, Finance Director
Budget Line Item: _____

Robles, Rael and Anaya, P.C. Town Attorney

Date signed

Date signed

PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

The Town of Taos

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a

qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper

payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

_____ *(seal)*

Contractor's Name and Corporate Seal

_____ *(seal)*

Surety's Name and Corporate Seal

By: _____

Signature

By: _____

Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____

Signature

Attest: _____

Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the

Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

CERTIFICATE OF INSURANCE

Certificate of Insurance to be inserted here, in accordance with the General Conditions and coverages as stipulated in the Supplementary Conditions.

<p>INFRASTRUCTURE IMPROVEMENTS PROJECT</p> <p>TOWN OF TAOS</p> <p>Taos Regional Landfill-Construction of Cell 5</p> <p>PARTIAL PAYMENT ESTIMATE</p>	<p>CONTRACT NO. _____</p> <p>PARTIAL PAYMENT ESTIMATE NO. _____</p> <p>PAGE 1 OF 3</p>
--	--

OWNER: Town of Taos	CONTRACTOR: _____	PERIOD OF ESTIMATE FROM: _____ TO: _____
------------------------	-------------------	--

CONTRACT CHANGE ORDER SUMMARY				ESTIMATE	
No.	Agency Approval Date	Amount			
		Additions	Deductions		
				1. Original Contract	\$ -
				2. Change Orders	\$ -
				3. Revised Contract (1 + 2)	\$ -
				4. Work Completed	\$ -
				5. Stored Materials	\$ -
				6. Subtotal (4 + 5)	\$ -
				7. Retainage	\$ -
				8. Previous Payments	\$ -
				9. Subtotal (6-7-8)	\$ -
				10. Tax @ 7.000%	\$ -
				11. Current Payment Due	\$ -
TOTALS		\$ -	\$ -		
NET CHANGE		\$ -			

CONTRACT TIME			
Original (days) _____	On Schedule	<input type="checkbox"/> Yes <input type="checkbox"/> No	Starting Date _____
Revised _____			Projected Completion _____
Remaining _____			

<p>CONTRACTOR'S CERTIFICATION</p> <p>The undersigned Contractor certifies that: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.</p>	<p>ENGINEER'S CERTIFICATION</p> <p>The undersigned certifies that the work has been carefully inspected and to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the Contract Documents.</p> <p>Engineer: Souder, Miller & Associates</p> <p>By _____</p> <p>Date _____</p>
---	---

Contractor: _____

By _____

Date _____

ACCEPTED BY AGENCY:

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the Contract Documents.

APPROVED BY OWNER: Town of Taos

Owner: _____

By _____

Date _____

By _____

Title _____

Date _____

CONSTRUCTION PROGRESS PAYMENT

TOWN OF TAOS

Taos Regional Landfill-Construction of Cell 5

Partial Payment Estimate No. ____

(construction period)

Contractor: _____

Item	Description	Unit Price	Original Amount	Original Value	Revised Amount	Revised Value	Work Completed			Total Completed	Percent Complete	Balance To Finish	
							Qty	Previous	Qty This Period				
1				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
2				\$ -		\$ -	0	\$ -	5	\$ -	\$ -	0.0%	\$ -
3				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
4				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
5				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
6				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
7				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
8				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
9				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
10				\$ -		\$ -	0	\$ -	0	\$ -	\$ -	0.0%	\$ -
TOTALS (TAX NOT INCLUDED)				\$ -		\$ -		\$ -		\$ -	\$ -	0.0%	\$ -

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	The Town of Taos	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Souder, Miller & Associates	Engineer's Project No.:	4230627
Project:	Taos Regional Landfill Cell 5 Construction	Contract Name:	

This [preliminary] [final] Certificate of Substantial Completion applies to:

All Work The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: None
 As follows

Amendments to Contractor's responsibilities: None
 As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:		RECEIVED:		RECEIVED:	
By: _____	By: _____				
(Authorized signature)	Owner (Authorized Signature)	Owner (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____				
Date: _____	Date: _____				

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
 1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
 1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
 - 1. include at least the specific coverages provided in this Article.
 - 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 - 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 - 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 - 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, 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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably 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.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, 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 performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
 - C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
 - F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

- O. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.

- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

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INTRODUCTION

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

AMENDED OR SUPPLEMENTED STANDARD GENERAL CONDITIONS

SC-1.01.A.49 Additional Defined Terms

49. *Alternate Bid* – Amount stated in the Bid as the sum to be added from the amount of the Base Bid if the corresponding change in the project scope, materials, and/or methods of construction is awarded by the owner.
50. *Base Bid* – Amount stated in the Bid as the sum for which the Bidder offers to perform the work, excluding alternate Bids.

SC-3.01.F Bidding Documents in Electronic Format

Add the following new subparagraph after subparagraph GC-3.01.E:

- F. For the present Project, Bidding Documents in electronic media format are furnished to bidding contractors for the sole purpose of preparing bids, and not for construction. The selected construction Contractor shall not rely on files provided in electronic media format for construction, but rather hard copies of such data provided by the Engineer or Owner upon award of the Contract.

SC-5.03 Subsurface and Physical Conditions

Add the following new paragraphs immediately after Paragraph 5.03.B:

- C. The following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
 1. Soil Testing performed by ACS Laboratory & Field Testing Services, Bernalillo, NM 87004 on April 23, 2014. Seven soil samples taken from Cells 3B, 4A, and other landfill locations (refer to map) were tested. The technical data contained in such laboratory reports upon which Contractor may rely is Particle Size Distribution Analysis (ASTM C 117, C 136), Moisture-Density Relationships (ASTM D 698), and Hydraulic Conductivity Analyses (ASTM D 5856). The laboratory report consists of 18 pages.
- D. No other drawings of physical conditions relating to existing surface or subsurface structures at the Site are known to the Owner.

- E. The reports and drawings identified above are not part of the Contract Documents, but the “technical data” contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Engineer.

SC-5.04 Differing Subsurface or Physical Conditions

Add the following new paragraph immediately after Paragraph 5.04.D:

- E. The circumstances and potential resulting actions described in Paragraphs 5.04.A, B, C and D do not apply in the case of subsurface or surface rock or soils. The Contractor is advised that the results of the exploration and tests of subsurface conditions at the Site as presented in the geotechnical investigation referenced in SC-5.03.C.1, are given only as an attempt to provide the Contractor with a general idea of what subsurface conditions might be expected, and Owner is not responsible for any discrepancies or inaccuracies. No additional payment will be made for rock removal and disposal, nor the importing of special bedding/backfill material to meet the specifications, nor special excavation methods required to trench in rock. In all cases, all such work will be considered incidental to the cost of related work.

SC-5.05 Underground Facilities

Delete Paragraphs 5.05.B, C, D and E in their entirety and insert the following in their place:

- B. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy (as defined in §62-14-5 NMSA 1978) in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. The Contractor will proceed to work with the underground facility owner to relocate, preserve or remove the undocumented or inaccurately marked underground facility to complete contract work. Compensation for such work, if any, will be negotiated by and between the Contractor and the facility owner, with no claim to the Owner by the Contractor for costs associated for resulting delays (Section 4.C, §62-14-5 NMSA 1978).
- C. Concurrently the Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Times, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the extent, if any, of any such adjustment in Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 12.01.

SC-5.06 Hazardous Environmental Conditions

Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or drawings relating to Hazardous Environmental Conditions at the site are known to the Owner.
- B. Not used

SC-6.01 Performance, Payment, and Other Bonds

Add the following new paragraphs immediately after Paragraph 6.01.F:

- G. Pursuant to NMSA 1978, Section 13-1-148.1, all Subcontractors whose subcontracted work is valued at one hundred twenty-five thousand dollars (\$125,000) or more shall be subject to this same requirement as set forth in Paragraphs 6.01 A-F, except that the Subcontractor's bonds are to be payable to the prime Contractor, not the Owner. The Performance and Payment Bond required shall be provided to the general Contractor at the time the subcontract is executed, and a copy delivered to the Owner. The Performance and Payment Bond is at the expense of the Subcontractor and should clearly state the amount and requirements of the bond. (§ 13-4-37). Failure of a Subcontractor to provide the required bonds shall not subject Owner to any increase in cost due to approved substitution of Subcontractor.

SC-6.03 Contractor's Liability Insurance

Add the following new paragraph immediately after Paragraph 6.03.J:

- K. The limits of liability for insurance required by Paragraph 6.03 of the General Conditions shall provide coverage as stipulated in the Town of Taos Construction Contract for Taos Regional Landfill Construction of Cell 5.

SC-7.06.A Subcontractors

Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:

The Contractor shall not award work valued at more than fifty percent (50%) of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-7.12 Safety and Protection

Add the following new paragraphs immediately after Paragraph 7.12.G:

- H. In accordance with OSHA stipulations, there may be locations within the project that are determined to be confined spaces, and possibly permit-required confined spaces. It is solely the Contractor's responsibility to determine where special permits may be required and to apply for and obtain any required permit and to subsequently assure compliance with all provisions of the permit on the part of Contractor's personnel and that of all Subcontractors. The cost of obtaining and implementing such permits shall be considered incidental to related work. No additional compensation will be made by the Owner. The Contractor's safety program must include reference to such permit requirements as well as a copy of the permit, and Owner and Engineer must be informed of all specific requirements related to entry, per Paragraph 7.12.D.
- I. Contractor shall provide two (2) copies of the safety plan to the Engineer prior to commencing construction (one shall be for Owner's files). Neither the Owner nor Engineer shall approve or

comment on the Contractor's safety plan, nor shall the Owner or Engineer assume any responsibility for assuring compliance on the part of personnel on site, other than Owner's or Engineer's employees and representatives, as stipulated in Paragraph 7.12.D.

SC-7.13.B Contractor Safety Representative

Add the following new paragraph immediately after Paragraph 7.13.A:

- B. Contractor Safety Representative shall personally confer with the Resident Project Representative and Engineer at least once prior to commencement of the Work and at least once per week during Project execution.

SC-7.16 Submittals

Add the following new paragraphs immediately after Paragraph 7.16.E:

- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-10.03 Project Representative

Add the following new paragraphs immediately after Paragraph 10.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
 - 1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
 - 2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
 - 3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
 - 4. Liaison:
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

- c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
 - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor and notify Engineer of availability of Samples for examination.
 - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
10. Records:
 - a. Prepare a daily report or keep a diary or logbook, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

- b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - c. Maintain records for use in preparing Project documentation.
11. Reports:
- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
 - b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
 - c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.
14. Completion:
- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
 - b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.
- C. The RPR shall not:
- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 - 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 - 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 - 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

SC-15.01.D, 15.06.D, 16.04.A, and 16.04.B Notice of Extended Payment Provision

This contract allows the Owner to make payment within forty-five (45) days after submission of an undisputed request for payment. Therefore Paragraphs 15.01.D, 15.06.D, 16.04.A and 16.04.B shall hereby reference a period of forty-five (45) days for Owner to effect payment instead of ten (10) days and/or thirty (30) days.

WORK CHANGE DIRECTIVE NO. _____

Date of Issuance:	Effective Date:
Owner: The Town of Taos	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer: Souder, Miller & Associates	Engineer's Project No.: 4230627
Project: Taos Regional Landfill Cell 5 Construction	Contract Name:

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

- Non-agreement on pricing of proposed change.
- Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price \$ _____ [increase] [decrease].
 Contract Time _____ days [increase] [decrease].

Basis of estimated change in Contract Price:

- Lump Sum
- Unit Price
- Cost of the Work
- Other

RECOMMENDED:	AUTHORIZED BY:	RECEIVED:
By: _____ Engineer (Authorized Signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____
 Title: _____

CHANGE ORDER NO. _____

Date of Issuance:	Effective Date:
Owner: The Town of Taos	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer: Souder, Miller & Associates	Engineer's Project No.: 4230627
Project: Taos Regional Landfill Cell 5 Construction	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____
Title: _____

FIELD ORDER NO. _____

Date of Issuance:

Effective Date:

Owner: The Town of Taos

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer: Souder, Miller & Associates

Engineer's Project No.: 4230627

Project: Taos Regional Landfill Cell 5 Construction

Contract Name:

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

_____ Specification(s)

_____ Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:

RECEIVED:

By: _____
Engineer (Authorized Signature)

By: _____
Contractor (Authorized Signature)

Title: _____

Title: _____

Date: _____

Date: _____

Copy to: Owner

APPENDIX A

**Minimum Wage Rate Determination
by the New Mexico Department of Workforce Solutions**



PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than \$60,000 in the state of New Mexico, the following list addresses many of the responsibilities that are defined by statute or regulation to each project stakeholder.

Contracting Agency

- Ensure that all contractors wishing to bid on a Public Works project when the project is \$60,000 or more are actively registered with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> (Contractor Registration) prior to bidding.
- Please submit Notice of Award (NOA) and Subcontractor List(s) to the PWAA website promptly after the project is awarded.
- Please update the Subcontractor List(s) on the PWAA website whenever changes occur.
- All sub-contractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.
- Ninety days after project completion please go into the PWAA system and close the project. Only contracting agencies are allowed to close the project. Agents or contractors are not allowed to close projects.

General Contractor

- Provide a complete Subcontractor List and Statements of Intent (SOI) to Pay Prevailing Wages for all contractors, regardless of amount of work, to the contracting agency within 3 (three) days of award.
- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- Confirm the Wage Rate poster, provided in PWAA, is displayed at the job site in an easily accessible place.
- When the project has been completed, make sure the Affidavits of Wages Paid (AWP) are sent to the contracting agency.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.



LABOR RELATIONS DIVISION
121 Tijeras Ave NE, Suite 3000
Albuquerque, NM 87102
Phone: 505-841-4400
Fax: 505-841-4424

WWW.DWS.STATE.NM.US

Subcontractor

- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.

Additional Information

Reference material and forms may be found in the New Mexico Department of Workforce Solutions Public Works web pages at: <https://www.dws.state.nm.us/Labor-Relations/Labor-Information/Public-Works>.

CONTACT INFORMATION

Contact the Labor Relations Division for any questions relating to Public Works projects by email at public.works@state.nm.us or call (505) 841-4400.



2026 SUBSISTENCE, ZONE, AND INCENTIVE PAY RATES

All contractors are required to pay subsistence, zone, and incentive pay according to the particular trade.

Asbestos workers or heat and frost insulators

- (1) Zone 1 shall consist of the area lying within the city limits of a circle whose radius is 66 miles from the city hall in Albuquerque or the city hall in El Paso - \$0.00 per day.
- (2) Zone 2 shall consist of Los Alamos county - \$40.00 per day if not furnished a company owned vehicle.
- (3) Zone 3 shall consist of the area lying beyond a circle whose radius is over 66 miles from the city hall in Albuquerque or the city hall in El Paso - \$85.00 per day.

Boilermakers/Blacksmiths

- (1) Per diem is calculated from city hall of the dispatch city or the employee's home address, whichever is closer to the job location,
- (2) Per diem is \$55.00 per day for travel between 70 and 120 miles and \$85.00 per day for travel over 120 miles.

Bricklayers

- (1) For Albuquerque area contractors, the starting point shall be at the intersection of I-40 and I-25 and shall continue to the job site. All other areas, the starting point shall be the employer's main office address.
- (2) Between 50 and 75 miles from the starting point, \$35.00 per day.
- (3) 76 or more miles from the starting point, \$55.00 per day.
- (4) All covered refractory work over 75 miles from the intersection of I-40 and I-25, \$80.00 per day.

Cement Masons

- (1) For employees travelling more than 50 miles to a job site in Santa Fe, \$20.00 per day.
- (2) In all other work performed more than 50 miles from the employer's main office, \$50.00 per day.
- (3) Mutually agreed-upon lodging or transportation paid for by the employer will substitute for subsistence pay.

Drywall Finishers and Tapers

- (1) All zones are measured from the Albuquerque City Hall.
- (2) Up to 70 miles is a free zone.
- (3) Between 71 and 100 miles shall be paid a \$30.00 expense allowance per day worked.
- (4) Over 101 miles shall be paid \$80.00 expense allowance per day worked.
- (5) Employees who travel from Santa Fe to Albuquerque will be paid \$30.00 per day or other mutually agreed upon lodging or transportation.
- (6) An area within a 50-mile radius of the address where an employee permanently resides at the time of hire, outside of Santa Fe or Albuquerque, shall be a free zone.
- (7) When the employer pays for the hotel for out-of-town work, the employee shall receive \$30.00 per day for expenses. Each room shall not house more than two people per room.

Electricians (inside classifications)

- (1) For Albuquerque only:
 - (a) Zone 1 is classified as being within 40 miles from the main post office.
 - (b) Zone 2 shall extend up to 10 miles beyond zone 1. Work performed within zone 2 shall be compensated nine percent above the journeyman rate for zone 1.
 - (c) Zone 3 shall extend up to 20 miles beyond zone 1. Work performed within zone 3 shall be compensated fifteen percent above the journeyman rate for zone 1.
 - (d) Zone 4 shall extend 20 miles or more beyond zone 1. Work performed within zone 4 shall be compensated twenty six percent above the journeyman rate for zone 1.
- (2) For Los Alamos County only: work performed within the county shall be compensated fifteen percent above the zone 1 journeyman rate.
- (3) For all other counties:
 - (a) Zone 1 is:
 - (i) within six miles from the main post office for Raton, Tucumcari, and Farmington.
 - (ii) within eight miles from the main post office for Las Vegas.
 - (iii) within ten miles from the main post office for Santa Fe and Gallup.

- (iv) within twelve miles from the main post office for Belen, Carrizozo, Clovis, Los Lunas, Portales, Roswell, Ruidoso, Artesia, Carlsbad, Hobbs, and Lovington.
- (v) within fourteen miles from the main post office for Espanola.
- (b) Zone 2 shall extend up to 20 miles beyond zone 1. Work performed within zone 2 shall be compensated nine percent above the journeyman rate for zone 1.
- (c) Zone 3 shall extend up to 30 miles from zone 1. Work performed within zone 3 shall be compensated fifteen percent above the journeyman rate for zone 1.
- (d) Zone 4 shall extend beyond 30 miles from zone 1. Work performed within zone 4 shall be compensated twenty six percent above the journeyman rate for zone 1.
- (4) Commuting time to and from a job site at the beginning and end of each workday is not compensable. However, if workers are required to report to the shop at the start of the day or return to the shop at the end of the day, then that time spent traveling is compensable. Similarly, time spent traveling from job to job is compensable. In both cases, workers shall be paid for the time spent traveling and shall be furnished transportation by the employer. Under these conditions the Zone 1 rate and any applicable overtime will be paid.

Electricians (outside classification)

Zone 2: \$50.00 per diem to be paid for work 30 miles outside of Santa Fe and 60 miles outside of Albuquerque. No per diem in Los Alamos County.

Glaziers

- (1) When out-of-town travel is required, the employer shall provide suitable lodging with no more than two people per room and \$30.00 per day for expenses; or
- (2) Pay \$100.00 per day for expenses, plus their regular rate of pay.
- (3) Employees required to use a personal vehicle for travel to a jobsite beyond a 50-mile radius from their residence or the employer's shop, whichever is closer to the job, shall be compensated at the current IRS rate for actual mileage incurred beyond the 50-mile radius, plus their regular rate of pay for travel time.

Ironworkers

- (1) Travel more than 50 miles from the interchange of Interstate 40 and Interstate 25 or from the employee's home should be paid at \$10.00 per hour.

- (2) If travel is within Santa Fe County, travel time shall be paid at \$3.00 per hour.

Laborers

- (1) Type A:
 - (a) Work travel between 50 and 85 miles from the union halls of Albuquerque, Espanola, Farmington or Las Cruces should be compensated at \$3.50 per hour.
 - (b) Work travel 86 miles or greater from the union halls of Albuquerque, Espanola, Farmington or Las Cruces should be compensated at \$5.00 per hour.
- (2) Types B and C:
 - (a) Work travel over 70 miles from the union halls of Albuquerque, Espanola, Farmington, or Las Cruces shall be paid at \$7.00 per hour in travel pay, not to exceed 10 hours per day;
 - (b) If an overnight stay is necessary, the employer shall pay \$40.00 per day for meals, in addition to travel pay.
- (3) Type H – no zone subsistence pay:
- (4) If an employer provides the employee transportation and mutually agreeable, suitable lodging with no more than two people in a room in areas where overnight stays are necessary, subsistence rates do not apply.

Millwrights

- (1) All zone pay shall be calculated from the address of the city hall of the respective dispatch point using the “shortest route” filter on Google Maps.
- (2) Zone 1: Work traveled up to 45 miles from the city hall of the respective dispatch points is a free zone.
- (3) Zone 2: Work traveled between 45 miles and 100 miles shall be compensated at \$4.00 per hour above base wage.
- (4) Zone 3: Work traveled 101 miles or more shall be compensated at \$6.00 per hour above base wage.
- (5) If employer fails to provide suitable lodging, employer shall pay \$110.00 per diem.
- (6) If an employee’s principal place of residence is within 45 road miles from the project, no subsistence or travel time shall be paid.

Operating Engine

- (1) Type A operators should be compensated for zone and subsistence as follows:
 - (a) Work travel between 50 and 85 miles from the interchange of Interstate 25 and Interstate 40 in Albuquerque, or from the Farmington City Hall in Farmington, should be compensated at \$2.50 per hour.
 - (b) Work travel 86 miles or more from the interchange of Interstate 25 and Interstate 40 in Albuquerque or from the Farmington City Hall in Farmington, should be compensated at \$4.00 per hour.
- (2) Type B and C operators:
 - (a) Base points for operators are 30 miles and beyond from the following base points or the employee's home, whichever is closer:
 - (i) Bernalillo county courthouse in Albuquerque;
 - (ii) State capital building in Santa Fe;
 - (iii) City hall in Farmington.
 - (b) Zone and subsistence for Albuquerque, Santa Fe, and Farmington are as follows:
 - (i) work travel between 30 and 50 miles from the base point compensated at \$20.00 per day;
 - (ii) work travel between 51 and 100 miles from the base point compensated at \$50.00 per day;
 - (iii) work travel over 100 miles from the base point that involves an overnight stay compensated at \$100.00 per day.
 - (c) Zone and subsistence for Los Alamos County, \$100.00 per day. This takes precedence over the 50-mile radius for Santa Fe zone and subsistence.
 - (d) If an employer provides the employee transportation and mutually agreeable suitable lodging in area where overnight stays are necessary, subsistence rates do not apply.
- (3) Type H operators are not eligible for zone and subsistence pay.

Painters

- (1) When out-of-town travel is required, the employer shall provide suitable lodging with no more than two people per room and \$30.00 per day for expenses.
- (2) When out-of-town travel is required and employer does not provide lodging, employer shall pay \$100 per day for expenses, plus their regular rate of pay.
- (3) Employees required to use a personal vehicle for travel to a jobsite beyond a 60-mile radius from their residence or the employer's shop, whichever is closest to

the job, shall be compensated at the current IRS rate for actual mileage incurred beyond the 60-mile radius, plus their regular rate of pay for travel time.

Paper hangers

- (1) When out-of-town travel is required, the employer shall provide suitable lodging with no more than two people per room and \$30.00 per day for expenses.
- (2) When out-of-town travel is required and employer does not provide lodging, employer shall pay \$100.00 per day for expenses, plus their regular rate of pay.
- (3) Employees required to use a personal vehicle for travel to a jobsite beyond a 50-mile radius from their residence or the employer's shop, whichever is closer to the job, shall be compensated at the current IRS rate for actual mileage incurred beyond the 50-mile radius, plus their regular rate of pay for travel time.

Plasterers

- (1) Employees who travel from Albuquerque to Santa Fe should be compensated at \$20.00 per day or other mutually agreed suitable lodging.
- (2) Except for employees who travel from Santa Fe to Albuquerque, work travel over 75 miles from the employer's office over the most typically traveled route should be compensated at \$5.00 per hour and capped at \$40.00 per day or mutually agreed suitable lodging.

Plumbers and pipefitters

- (1) Work travel for 90 or more miles from an employee's primary residence, and involving an overnight stay, should be compensated at \$120.00 per day.
- (2) No zone or subsistence pay is required should the employer elect to cover the room cost.

Roofers

- (1) Employees assigned to jobs located more than 60 miles from the employer's place of business shall receive transportation to and from the job.
- (2) Overnight stays required by the employer, \$90 or more per diem per day to cover all room and board expenses.

Sheet metal workers

- (1) Subsistence will be paid in any area outside the employer's home zone unless the jobsite is within 90 miles, by most direct regularly traveled route, of an employee's principal place of residence. In which case the employer will not be required to pay subsistence to that employee while working on the jobsite.
- (2) If an overnight stay is required, \$120.00 subsistence will be paid for each day worked outside of the employer's home zone.
- (3) No subsistence pay is required should employer decide to cover room costs at a suitable location and no more than two workers are in a room.
- (4) Zone 1: any are within an employer's home zone. An employer's home zone shall consist of 90 miles by most direct regularly traveled route from the main post office in the municipality of the employer's primary place of business, and including Los Alamos and Espanola, regardless of mileage.
- (5) Zone 2 (Industrial):
 - (a) Industrial work will be defined as all new construction work performed on the following types of facilities: electrical generation plants, co-generation plants 50 megawatts and over, refineries, natural and LP gas plants, mills, mines, and concentrators. Maintenance and retrofit work are excluded.
 - (b) The minimum rate of pay for all work described in subsection (a) of this section will be as indicated under zone 3 of the public works prevailing wage rates in 11.1.2.20 NMAC.
- (6) Zone 3 (Los Alamos):
 - (a) All work on Los Alamos National Laboratory property, and all prevailing wage work within the county of Los Alamos.
 - (b) The minimum rate of pay for all work described in subsection (a) of this section will be indicated under zone 3 of the public works prevailing wage rates in 11.1.2.20 NMAC.
- (7) Travel:
 - (a) All time spent traveling during the regular workday will be considered time worked and will be paid at the zone 1 rate of pay, provided such travel is directed by the employer. Travel before or after the regular workday will not be considered time worked and will not be paid unless required by federal or state law. If required by law, all time spent traveling outside the regular workday will be paid at the overtime rate of time and a half times two thirds the regular zone 1 rate of pay.

- (b) If an employer send an employee to perform work outside the territorial jurisdiction of the United States or Canada, travel pay and subsistence arrangements shall be negotiated locally.

Soft floor layer

- (1) Zone 1: Base pay for an area within a 30-mile radius from the main post office in the city or town where the employee permanently resides. Albuquerque, Santa Fe, and Belen shall be considered Zone 1.
- (2) Zone 2: Work travel between 30 and 75 miles from the main post office in the town where an employee permanently resides shall be compensated at \$1.00 per hour above base pay.
- (3) Zone 3: Work travel 75 miles or more from the main post office in the town where an employee permanently resides shall be compensated at \$3.13 per hour above base pay.
- (4) Employer will furnish transportation or gasoline for all work performed beyond the 30-mile radius that encompasses the free cities of Albuquerque, Santa Fe, or Belen.
- (5) When the employee is directed to report to a job site and the distance to the job site requires the employee to stay out of town overnight, the employer shall provide housing arrangements for the affected employees.

Sprinkler fitters

- (1) Work travel between 60 and 80 miles from the employee's primary residence should be compensated at \$30.00 per day.
- (2) Work travel between 81 and 100 miles from the employee's primary residence should be compensated at \$39.00 per day.
- (3) Work travel of 101 miles or more from the employee's primary residence should be compensated at \$150.00 per day.
- (4) No zone or subsistence pay shall be paid when the employer provides daily transportation and the employee elects to travel back and forth from home.

TYPE "H" – HEAVY ENGINEERING

Effective January 1, 2026

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
Cement Mason	26.31	7.43	0.60
Drywall Finisher/Taper – Industrial	32.57	9.58	0.60
Drywall Finisher/Taper – Industrial: Los Alamos County	35.85	12.82	0.60
Millwright/pile driver	51.77	22.13	0.60
Painter-Industrial	24.00	6.70	0.60
Painter – Industrial: Los Alamos County	35.85	12.82	0.60
Paperhanger	24.00	6.70	0.60
Paperhanger: Los Alamos County	36.85	12.82	0.60
Plumber/Pipefitter	44.32	18.00	0.60
Sheet Metal Worker	41.74	19.29	0.60
Soft Floor Layer	21.52	9.40	0.60
Soft Floor Layer: Los Alamos County	35.87	12.92	0.60
Asbestos Workers/Heat & Frost Insulators			
Asbestos workers/Heat & Frost Insulators	39.23	12.16	0.60
Asbestos workers/Heat & Frost Insulators: Los Alamos County	41.36	12.16	0.60
Boilermaker/Blacksmith			
Boilermaker/blacksmith	35.88	32.28	0.60
Boilermaker/blacksmith: San Juan County	36.83	31.88	0.60
Bricklayer/Block Layer/Stonemason			
Bricklayer/Block layer/Stonemason	33.41	12.04	0.60
Bricklayer/Block layer/Stonemason: Curry, DeBaca, Quay and Roosevelt counties	23.10	8.98	0.60

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
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Bricklayer/Block layer/Stonemason: Dona Ana, Otero, Eddie and Lea counties	26.42	8.98	0.60
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Carpenter

Carpenter/Lather	32.12	14.28	0.60
Carpenter: Los Alamos County	38.56	14.70	0.60

Electricians-Outside Classifications: Zone 1

Ground man	28.54	13.36	0.60
Equipment Operator	40.94	17.73	0.60
Lineman or technician	51.71	21.43	0.60
Journeyman Substation Technician	48.15	20.43	0.60
Journeyman Transmission Technician	47.58	20.40	0.60
Cable Splicer	52.98	21.75	0.60

Electricians-Outside Classification: Zone 2

Ground man	28.54	13.36	0.60
Equipment Operator	40.94	17.73	0.60
Lineman or technician	51.71	21.43	0.60
Journeyman Substation Technician	48.15	20.53	0.60
Journeyman Transmission Technician	47.58	20.40	0.60
Cable Splicer	52.98	21.75	0.60

Electricians-Outside Classifications: Los Alamos

Ground man	29.35	13.38	0.60
Equipment Operator	42.12	17.76	0.60
Lineman	53.07	21.77	0.60
Journeyman Technician	49.55	20.89	0.60
Cable Splicer	58.28	23.07	0.60

Trade Classification**Base Rate****Fringe Rate****Apprenticeship****Electricians-Inside Classifications: Zone 1**

Wireman/low voltage technician	42.30	13.42	0.60
Cable Splicer	46.53	13.55	0.60

Electricians-Inside Classification: Zone 2

Wireman/low voltage technician	46.11	13.53	0.60
Cable Splicer	50.34	13.67	0.60

Electricians-Inside Classification: Zone 3

Wireman/low voltage technician	48.65	13.60	0.60
Cable Splicer	52.88	13.74	0.60

Electricians-Inside Classification: Zone 4

Wireman/low voltage technician	53.30	13.75	0.60
Cable Splicer	57.53	13.87	0.60

Electricians-Inside Classification: Doña Ana, Hidalgo, Luna, and Otero County

Wireman/low voltage technician	40.00	9.92	0.60
Cable splicer	40.00	9.92	0.60

Electricians-Inside Classification: Los Alamos

Wireman/low voltage technician	48.65	16.04	0.60
Cable Splicer	52.88	16.38	0.60

Glazier

Glazier/Fabricator	22.75	7.70	0.60
Glazier/Fabricator: Los Alamos County	22.75	7.70	0.60

Ironworker

Ironworker Journeyman	29.45	19.51	0.60
Probationary Ironworker	23.56	19.51	0.60

Trade Classification**Base Rate****Fringe Rate****Apprenticeship****Roofer**

Roofer Journeyman	31.20	9.36	0.60
Roofer Helper	18.72	9.36	0.60

Operators

Group I	27.02	6.95	0.60
Group II	27.25	6.95	0.60
Group III	28.31	6.95	0.60
Group IV	28.91	6.95	0.60
Group V	29.03	6.95	0.60
Group VI	29.31	6.95	0.60
Group VII	29.33	6.95	0.60
Group VIII	32.39	6.95	0.60
Group IX	39.15	6.95	0.60
Group X	43.52	6.95	0.60

Laborers

Group I- Unskilled	20.76	7.74	0.60
Group II – Semi-skilled	22.71	7.74	0.60
Group III- Skilled	23.02	7.74	0.60
Group IV - Specialty	23.42	7.74	0.60

Laborers-Underground

Group I	22.87	7.12	0.60
Group II	23.67	7.12	0.60
Group III	24.39	7.12	0.60

Truck Drivers

Group I	21.70	9.65	0.60
Group II	21.70	9.65	0.60

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
Group III	21.70	9.65	0.60
Group IV	21.70	9.65	0.60
Group V	21.70	9.65	0.60
Group VI	21.70	9.65	0.60
Group VII	21.70	9.65	0.60
Group VIII	21.70	9.65	0.60
Group IX	27.70	9.65	0.60

NOTE: All contractors are required to pay SUBSISTENCE, ZONE, AND INCENTIVE PAY according to the particular trade. More information available at <https://www.dws.state.nm.us/public-works>.

For more information about the Subsistence, Zone, and Incentive Pay rates, or to file a wage claim, contact the New Mexico Department of Workforce Solutions Labor Relations Division at (505) 841-4400 or visit us online at www.dws.state.nm.us.

APPENDIX B

Project Sign Requirements

PROJECT SIGN REQUIREMENTS

PROJECT IDENTIFICATION SIGN:

TAOS REGIONAL LANDFILL – CONSTRUCTION OF CELL 5

The Contractor shall provide, erect, and maintain for the duration of the construction project one identification sign at the construction site. The sign shall be painted on one side with a background color of yellow with red lettering of 3/4" thick, not smaller than 4' x 6' nor larger than 4' x 8', marine grade plywood. The sign shall be mounted on two 4" x 4" posts, with the bottom of the sign at least four feet above grade. The sign shall be mounted level and at the location designated by the Engineer or the Owner's Representative. The sign shall be salvaged to the Owner at the end of the construction project.

Sample sign:

<p style="text-align: center;">TAOS REGIONAL LANDFILL CONSTRUCTION OF CELL 5</p> <p style="text-align: center;">Town of Taos</p> <p style="text-align: center;">FUNDED BY: Town of Taos Funds</p> <p>Financing Administered by: Town of Taos</p> <p>Contractor: (enter name of Contractor)</p> <p>Engineer: Souder, Miller & Associates</p> <p>Total Project Cost: (enter contract total amount)</p> <p>Projected Completion Date: (enter date according to contract)</p>

APPENDIX C

Storm Water Pollution Prevention Plan

**INSERT STORM WATER POLLUTION
PREVENTION PLAN**

APPENDIX D

Waste Excavation Plan

WASTE EXCAVATION PLAN

Taos Regional Landfill Taos, New Mexico

Prepared For:
The Town of Taos
as Fiscal Agent for the Taos Regional Landfill

for Submittal To:
New Mexico Environment Department
Resource Recovery Bureau
PO Box 5469
Santa Fe, NM 87502-5469

November 2025



Souder, Miller & Associates
Engineering ♦ Environmental ♦ Geomatics

5454 Venice Avenue NE, Suite D ♦ Albuquerque, NM 87113
505.299.0942 ♦ 877.299.0942 ♦ fax 505.293.3430 ♦ www.soudermiller.com

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Figures

Figure 1 – Site Vicinity Map

Figure 2 – Site Layout with Existing and Proposed Cells

Figure 3 – Site Map with Cells 5-7 Waste Excavation Areas

Figure 4– Cell 5 Site Map with Waste Excavation & Waste Segregation Area

Figure 5 – Cell 5 Sections A-A'

Tables

Table 1 – Primary Waste Excavation Roles & Responsible Personnel

Table 2 – Emergency Contact Phone Numbers

Table 3 – Landfill Gas Action Levels

Appendixes

Appendix A – NMED RRB Waste Excavation Checklist

Appendix B –Health & Safety Plan (HASP)

1.0 INTRODUCTION

The Taos Regional Landfill is located on the south side of Highway 64 approximately 5 miles northwest of Taos, New Mexico (Figure 1). Construction of disposal cells 5 through 7 will require excavation of buried waste on the margin of the old landfill to the west of the new cells. In order to install the new cell liner and anchor trench, up to approximately 8,000 in-situ cubic yards of waste may be required to be excavated from the northeastern margin of the old landfill and transported to the active landfill face in Cell 4 for proper disposal (Figure 2).

This Waste Excavation Plan (WEP) is an update to the previously approved 2015 WEP and addresses potential areas of existing waste that may be encountered during construction of Cell 5, 6, and 7. This updated plan addresses the requirements of The New Mexico Solid Waste Rules, for approval by the New Mexico Environment Department (NMED) Resource Recovery Bureau (RRB). The plan addresses the requirements for establishing a plan and procedure for removing, transporting and disposing of the excavated waste in a safe and efficient manner. The content and supporting attachments have been provided to satisfy the NMED SWB "Waste Excavation Checklist" requirements. A copy of the "Waste Excavation Checklist" is included as Appendix A.

1.1 Waste Excavation Plan Approval Process

This document has been prepared to establish a plan and procedures for the Taos Regional Landfill and their construction contractor to use for waste excavation in order to construct disposal cells 5 through 7. The type of work that qualifies for coverage of this WEP includes all waste excavation activities required to complete construction of new disposal units at the landfill.

As the excavated waste will only be transported no more than approximately 1,500 feet from the northeastern margin of the old landfill to the active landfill face in Cell 4 and will not leave the Taos Regional Landfill property, it is not anticipated that waste hauler registrations will be required. In the event that waste requiring disposal at a different facility is required, only registered waste haulers will be used. A site-specific Health & Safety Plan (HASP) for waste excavation activities is provided in Appendix B. Souder, Miller & Associates (SMA) will perform all landfill gas monitoring, waste screening and documentation of waste excavation activities. NMED SWB's approval is required prior to commencement of waste excavation activities.

1.2 Site Background

The Taos Regional Landfill is an active landfill located on the south side of Highway 64 northwest of Taos, Taos County, New Mexico (GPS coordinates 36°26'59.38"N; -105°38'40.76" W, Legal Section 34 and 35 (projected), Range 12 East, Township 26 North, NMPM). The landfill is owned by the Taos Regional Landfill Board while the Town of Taos is the managing agency for landfill operations. In accordance with 20.9.3 New Mexico Administrative Code (NMAC), the Taos Regional Landfill is a New Mexico permitted solid waste facility designed to dispose of residential, commercial and construction waste. Additionally, it is permitted to accept certain special waste (sludge waste).

The currently permitted portion of the landfill comprises approximately 100 acres of a 230 acre tract and consists of Cell #1 through Cell #7 as illustrated in Figure 2. The Taos Regional Landfill began accepting waste material in 2001 with an annual volume amount of approximately 30,300 tons per year. Cells 1 – through 3 have currently been filled, and the current waste disposal area is Cell 4 with Cells 5, 6, and 7 available for future expansion under the current NMED SWB permit (Permit# SWM-109103).

1.3 Site Hydrogeology

The Taos Regional Landfill is located in the Rio Grande rift in the southern San Luis Basin. The Town of Taos is located in a portion of the basin known as the Taos Plateau or Taos Embayment. The southern San Luis Basin is bounded on the west by the Picuris-Pecos fault zone and the Tusas and San Juan Mountains. The basin is bounded to the south and east by the Sangre de Cristo Mountains. The Embudo Fault is located at the south boundary and the Sangre de Cristo Fault is located at the eastern boundary.

The primary lithology of the plateau is locally erupted Pliocene age basaltic rocks, alluvial fan deposits and valley fill sediments. The Taos Regional Landfill is located in the region of Taos County known as the Costilla Plains. The Costilla Plains are made up of alluvial fan or valley fill material. The alluvial fan and valley fill materials generally consist of poorly sorted sand and gravel deposits that are laterally discontinuous and moderately heterogeneous. These sediments are underlain by Tertiary Basalt flows inter-bedded with valley fill sediments.

Ground water is typically found within the Quaternary and Tertiary alluvium near the Town of Taos. The groundwater flow direction is typically to the west and northwest. The flow gradient is highly variable around the Taos Plateau and varies depending on location relative to faults, proximity to the mountain front, and local variation in the geologic units.

1.4 Site Hazards & Contaminants

The primary site hazards anticipated during waste excavation activities at the Taos Regional Landfill are landfill gas generation and slope stability of the waste material. While excessive landfill gas generation at the Taos Landfill has not been an issue to date, there is the potential that the area to be excavated may be actively producing some volume of landfill gas. Landfill gas from municipal solid waste landfills can contain a variety of constituents. However, the primary constituents are methane, carbon dioxide, and nitrogen. Methane and carbon dioxide are both simple asphyxiants and have the potential to displace oxygen in the waste excavation area. Methane is also a flammable and potentially explosive gas with a lower explosive limit (LEL) of 5% (by volume) in air and an upper explosive limit (UEL) of 15%. Secondary constituents in landfill gas are typically a very small percentage of the landfill gas mixture and may include volatile organic compounds (VOCs) and hydrogen sulfide. SMA will perform air quality monitoring during all excavation activities and details of the monitoring program are included in Section 3.1 of this WEP and in the attached HASP.

As the excavation will be performed in waste comprised of various materials inter-bedded with daily soil cover material placed during initial waste disposal, it is difficult to determine what the exact properties of the waste/soil will be in order to ensure slope stability during excavation. Accordingly, slope stability will be monitored closely to ensure protection of site workers.

Additional hazards specific to waste excavation include potentially hazardous substances disposed of at the old Taos Landfill. Section 2.2 of this WEP provides a protocol for handling and disposal of hazardous and/or special waste, if encountered.

2.0 WASTE EXCAVATION PLAN

Implementation of this WEP will be the responsibility of the Town of Taos and their construction contractor. Technical questions will be addressed to SMA, which will perform all landfill gas monitoring, waste screening and documentation of waste excavation activities.

Copies of the completed and approved WEP will be distributed to:

- Town of Taos
- AJAC Construction (contractor)
- SMA (landfill professional/gas monitoring agent)
- NMED SWB

2.1 Health & Safety

All personnel working in or near the waste excavation area shall read, understand, acknowledge and follow the HASP included in Appendix B. The attached HASP will be implemented by the Town of Taos and its contractor's personnel during execution of the WEP. SMA will be on-site during all excavation activities and will provide landfill gas monitoring and observation services. The attached HASP addresses the following elements:

- Site description and scope of work;
- Identification of roles and responsibilities;
- Identification of site hazards;
- A Hazard Communication Plan;
- Personal protective equipment (PPE) requirements;
- A respiratory protection plan;
- Landfill gas monitoring procedures;
- Excavation safety;
- Site control; and
- Emergency contacts and procedures.

All onsite personnel working in the exclusion zone established around the waste excavation area shall be versed in hazard communication and are required to wear level D PPE (minimum). This includes but is not limited to a hard hat, safety glasses, safety vest and steel toe boots. Additionally, any individuals who will directly be handling waste will need to wear chemical resistant gloves and be cleared to work while wearing a respirator (if site conditions require upgrading to Level C PPE). Monitoring personnel provided by SMA will be 40-hour Occupational Health and Safety Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) trained.

An exclusion zone and contaminant reduction zone (CRZ) shall be established prior to commencement of waste excavation activities. The exclusion zone will be established based on work activities and will likely be

dynamic based on site conditions and activities being performed. Typically, the exclusion zone will include any area where waste is exposed or where heavy equipment is being operated. The CRZ will include a buffer area between the exclusion zone and areas outside of the normal traffic pattern of trucks and equipment. A first-aid station and decontamination equipment shall be set up outside of the CRZ in accordance with the site-specific HASP. The first aid and decontamination stations shall maintain (as needed) a first-aid kit, eyewash station, drinking water, fire extinguisher, a spill response kit, brushes, buckets, Alconox (or equal), deionized water, tap water, garbage bags, and a tarp for decontamination activities (if required).

Excavation and trench safety will be monitored and sloping requirements promulgated by OSHA shall be enforced. For purposes of this WEP, SMA assumed that the waste in the excavation area will have soil properties consistent with a Type C soil. OSHA requires that the maximum sloping of an excavation in Type C soil be 1.5:1. However, because of the anticipated difficulties in working a surface comprised of exposed waste, a flatter slope will likely be maintained in the excavation. Benching to reach desired depth will be employed.

The nearest hospital equipped with full service emergency room facilities is the Taos Urgent Care, approximately eight miles south of the Taos Regional Landfill, at 330 Paseo Del Pueblo Sur, Taos, NM 87571. The hospital phone number is listed in the attached Table 2 along with a list of other pertinent emergency contact numbers. A map with directions to the hospital is included as part of the attached HASP (Appendix B).

2.2 Site Monitoring & Certification

During all waste excavation activities, SMA will be on-site to monitor the types of waste being removed and monitor for landfill gasses. On-site SMA personnel will have the following qualifications and experience:

- 40-Hour HAZWOPER training (meeting OSHA requirements);
- Prior direct experience with excavation work;
- Knowledgeable in the operation, calibration, and maintenance of the air/landfill gas monitoring equipment being used;
- Be a “competent person” as defined by OSHA under 29 Code of Federal Regulations 1926.650(b)-Excavation/Construction;
- Be able to identify potentially hazardous waste or material that must be segregated for special disposal; and
- Be able to describe excavated material in terms of types of waste (with approximate percent of composition), organic content and degree of decomposition.

As it was not possible to screen every item of waste at the time of initial disposal, there is a potential that some material disposed of in the old Taos Landfill may not be suitable for re-disposal at an NMED-permitted landfill. Therefore, the excavated waste will be monitored for materials unsuitable for re-disposal. Items unsuitable for re-disposal include, but are not limited to, hazardous substances, asbestos containing materials, medical waste and batteries. Freezers and refrigerators encountered shall be segregated and inspected to identify if Freon is still present. If Freon is present, it will be removed by a certified Freon recycler prior to removal from the site. Additionally, any suspicious items shall be set aside for possible testing and determination of suitable disposal. Representative samples of waste that may be suspected of containing

regulated chemicals will be screened with a photo-ionization detector (PID) for the presence of VOCs (only VOCs with an ionization potential of <10.6 electron volts). If visual or field screening methods indicate evidence of possible hazardous waste, a representative sample may be collected and analyzed using the appropriate laboratory method(s) based on the type of suspected hazard present. Possible analysis includes EPA Method 8260 for VOCs, EPA Method 8081 for pesticides, EPA Method 8151 for chlorinated herbicides, EPA Method 8270 for semi-volatiles, EPA Method 6010 for metals (mercury, arsenic, barium, cadmium, chromium, lead, selenium and silver), EPA Method 600 for asbestos, or various other methods. Based on the results of the sample analyses, the material will be classified as standard waste or hazardous/special waste.

Materials classified as requiring special handling shall be separated and retained in a designated area (shown in Figure 3) in labeled drums or other containers depending on the waste characteristics, quantity and final disposal requirements. Staging of special and hazardous waste will be on double layer 6-mil visqueen sheeting bermed around the edges. Staged special/hazardous waste will be covered with 6-mil visqueen sheeting until proper disposal has been established. Types of waste encountered will be documented by SMA in a designated field notebook and/or field data sheets. SMA will obtain photographs of typical waste material (household, construction/demolition, etc.) as well as any special or hazardous waste.

2.2.1 Landfill Gas Monitoring

Landfill gas (%LEL of methane, hydrogen sulfide, carbon monoxide, carbon dioxide, oxygen, and VOC concentrations) will be measured by SMA in the field using handheld equipment prior to commencement of waste excavation activities in order to obtain background landfill gas levels. During excavation activities a combustible/toxic gas meter and a PID will be used to continuously monitor the work area for potential landfill gases and any oxygen deficiencies. The dataloggers on the instruments shall be in working order and the data can be downloaded on as needed basis. The combustible/toxic gas meter and PID will be calibrated daily and periodic readings will be recorded by SMA in a designated field notebook and/or field data sheet. Recommended action levels for methane, hydrogen sulfide, oxygen (reduced conditions), and VOCs are included in the attached Table 3. Meter audible warning indicators will be set at appropriate action levels. Many components of landfill gas are simple asphyxiants and have vapor densities greater than air and will tend to settle in low lying areas such as an excavation. Therefore, monitoring of oxygen levels is critical in ensuring the safety of workers in the excavation area.

2.3 Site Security

The Taos Regional Landfill is currently fenced around the perimeter, with all gates locked during times of inactivity and access restricted. Additionally, construction areas are fenced as appropriate to exclude unauthorized access. Access to the waste excavation area will be restricted to approved personnel. As an added safety measure, the waste excavation area will have orange safety fencing or warning tape placed around the perimeter of the excavation during non-working hours. The safety fence or warning tape shall be set back approximately two feet from the edge of the waste excavation area and will remain in place until excavation is completed.

2.4 Waste Excavation

The volume of waste to be excavated is up to approximately 8,000 cubic yards but may be more or less as determined during excavation activities. Cover material will likely not be segregated. Potholing will be conducted as the first phase of waste excavation activities. The waste area will be excavated prior to excavating the final cell slope below the waste; therefore, the excavation depth will likely be less than 20 feet. The final slope of the cell to be constructed is 4:1, therefore the waste excavation slope will be less than 1.5:1. The location of potential waste excavation areas are indicated on Figure 3.

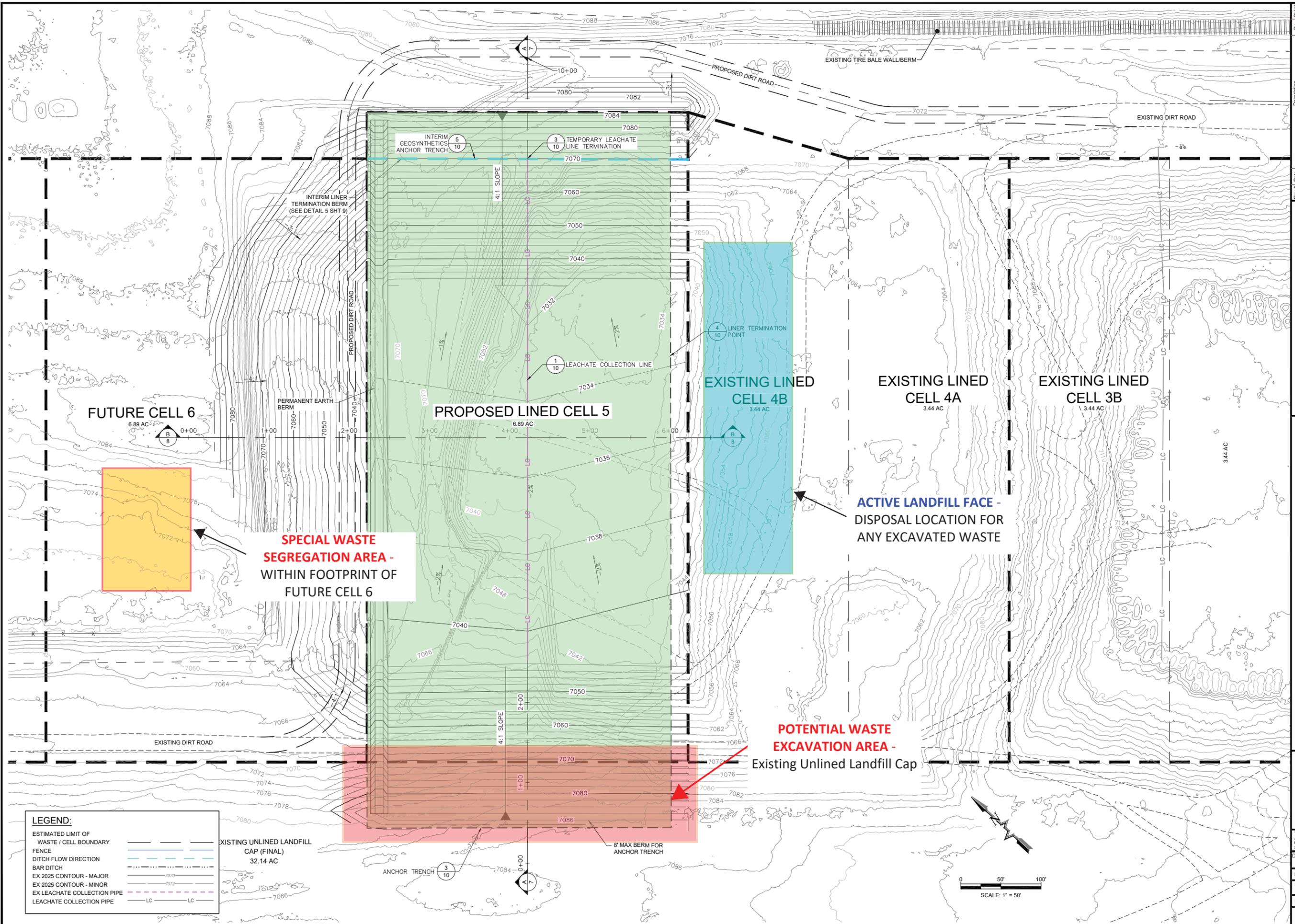
During construction of Cell 5, the excavated waste from the old Taos Landfill will be transported up to approximately 1,500 feet to the active landfill face in Cell 4 for proper disposal. Excavation activities will be accomplished using a track-hoe or front-end loader, and haul trucks. Because of the very short haul distance, SMA anticipates that the excavated waste will be directly loaded into the haul trucks. However, if progress dictates that waste needs to be stockpiled in order to continue with excavation activities, then the waste may be stockpiled either in the excavation area itself, or, if there isn't sufficient room within the excavation area, then the waste may be stockpile on a plastic (6-mil) lined and bermed containment area outside of the excavation area. Stockpiled material located outside of the excavation area shall be covered with a tarp or plastic sheeting to prevent waste from blowing off-site. Waste excavation, disposal, and potential stockpiling locations are illustrated on Figure 4. A cross section of Cell 5 is also included as Figure 5.

If necessary, a water truck will be used to keep the soils in and around the excavation area and haul road damp so that excessive dust is not generated and good visibility is maintained. However, every attempt will be made not to saturate the soils and not apply water directly to waste remaining in place which would increase the potential for slope failure. Depending on site-specific conditions, silt fencing may also be used around the excavation area in order to keep waste from blowing off-site. Daily pick-up of wind-blown trash near the waste excavation area and from the landfill property perimeter will be performed. More frequent trash pick-up may be warranted if operating under breezy to windy conditions. Excavation activities may need to be postponed if winds are excessive, as defined by the facility Operation Plan, which requires that the facility be shut down if windspeed exceeds 50 miles per hour (mph) more than 3 times during any given 10 minute period. Landfill operations will cease until the maximum wind speed measured at least three separate times during a 10 minute period is 50 mph or less. Postponement of excavation activities for excessive wind will be at the discretion of the Town of Taos and/or the landfill supervisor while postponement due to rain (or potential for rain) will be at the discretion of the Site Safety Officer as defined in the Health & Safety Plan.

3.0 CLOSEOUT DOCUMENTATION

After completion of waste excavation activities, SMA will conduct a final inspection and prepare a summary report for the Town of Taos discussing the results of site monitoring during waste excavation, final disposition of the excavated waste materials, estimate of the volume or measured tonnage of waste removed, description of the types and quantities of waste encountered, summary of hazardous and special waste encountered (if any), and photographs of excavation.

Figures



FUTURE CELL 6
6.89 AC

PROPOSED LINED CELL 5
6.89 AC

EXISTING LINED CELL 4B
3.44 AC

EXISTING LINED CELL 4A
3.44 AC

EXISTING LINED CELL 3B
3.44 AC

SPECIAL WASTE SEGREGATION AREA - WITHIN FOOTPRINT OF FUTURE CELL 6

ACTIVE LANDFILL FACE - DISPOSAL LOCATION FOR ANY EXCAVATED WASTE

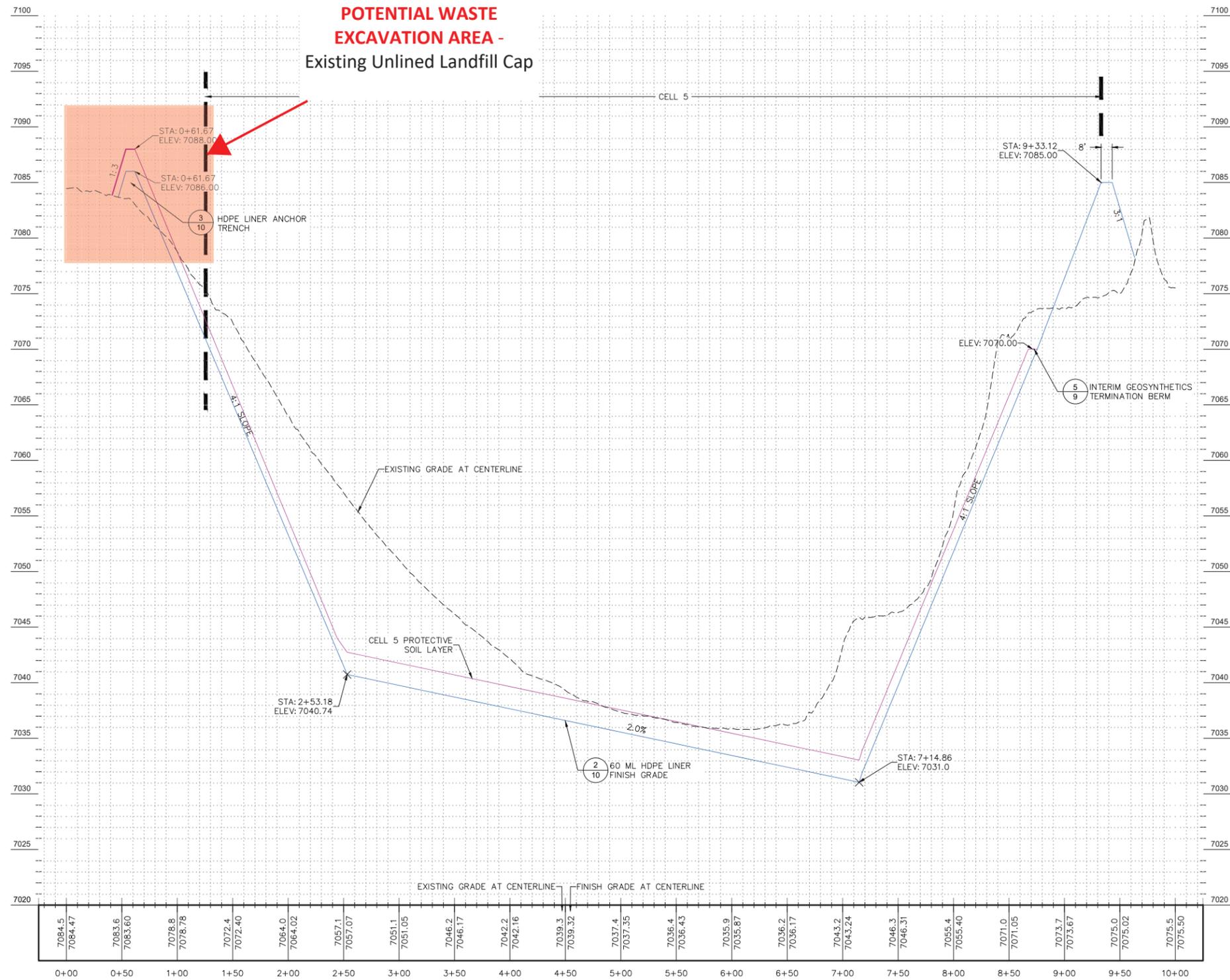
POTENTIAL WASTE EXCAVATION AREA - Existing Unlined Landfill Cap

LEGEND:

ESTIMATED LIMIT OF WASTE / CELL BOUNDARY	---
FENCE	---
DITCH FLOW DIRECTION	---
BAR DITCH	---
EX 2025 CONTOUR - MAJOR	---
EX 2025 CONTOUR - MINOR	---
EX LEACHATE COLLECTION PIPE	---
LEACHATE COLLECTION PIPE	---

EXISTING UNLINED LANDFILL CAP (FINAL)
32.14 AC

By	CHKC
Description	
Rev #	Date
<p>SOUDER, MILLER & ASSOCIATES Engineering • Environmental • Geomatics Serving the Southwest & Rocky Mountains 2904 Rode Park Drive East 100 Santa Fe, NM 87505 Phone (505) 473-9211 Fax (505) 471-6675 www.soudermiller.com</p>	
<p>WYOMING SPCC</p>	
<p>CELL 5 WASTE EXCAVATION & SEGREGATION AREA WASTE EXCAVATION PLAN TAOS REGIONAL LANDFILL</p>	
<p>ENTERPRISE PRODUCTS OPERATING, LLC.</p>	
<p>THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED.</p>	
Designed	MJP
Drawn	AB
Checked	SAM
Date:	NOV 2025
Scale: Horiz:	1"=50'
Scale: Vert:	N/A
Project No:	4230627
FIGURE:	4



NOTES:

1. CONTRACTOR TO EXTEND CELL 5 LINER ON TOP OF CLOSED CELL SOUTH OF CELL 5.
2. CONTRACTOR TO LOCATE AND TIE BOTH HDPE AND GCL IN TO EXISTING LINER OF CELL 4B.

LEGEND

- EX GROUND - 2025
- CELL LINER
- PROTECTIVE SOIL LAYER

PROFILE SECTION A-A

SCALE: HORIZ. 1" = 50 FT
VERT. 1" = 10 FT

Rev #	Date	Description	By	Chk'd

SOUDEY, MILLER & ASSOCIATES
 Engineering • Environmental • Geomatics
 Serving the Southwest & Rocky Mountains
 2904 Rode Park Drive East 100
 Santa Fe, NM 87505
 Phone (505) 473-9211 Fax (505) 471-6675
 www.soudermiller.com

**SECTION CELL 5 - ALIGNMENT A
 WASTE EXCAVATION PLAN
 TAOS REGIONAL LANDFILL**

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED		
Designed MJP	Drawn AB	Checked SAM
Date:	NOV 2025	
Scale:	Horiz: 1"=50' Vert: N/A	
Project No:	4230627	
FIGURE:	5	

Tables

**Table 1
Primary Waste Excavation Roles & Responsible Personnel**

Project Role	Affiliation	Responsible Personnel & Contact Information
Owner	Taos Regional Landfill Board	Reynold Vasquez, Public Works Director 575.737.2641
Contractor	TBD	TBD
Waste Excavation Project Manager	TBD	TBD
Waste Excavation On-Site Supervisor	TBD	TBD
Waste Excavation Plan (development)	Souder, Miller & Associates (SMA)	Scott A. McKitrick, P.G. - 505.220.6542 <i>scott.mckitrick@soudermiller.com</i>
Site Safety Officer	TBD	TBD
Landfill Gas Monitoring & Waste Excavation Observation	Souder, Miller & Associates (SMA)	Cassie Parker - 575.642.0365 <i>cassie.parker@soudermiller.com</i>
Regulatory Agency	New Mexico Environment Department (NMED) Resource Recover Bureau (RRB)	TBD
		TBD

Table 2
Emergency Contact Phone Numbers

Entity	Phone Number
Taos Urgent Care	911 or (575) 758-1414
Taos Fire Department	911 or (575) 758-4656
Taos Police Department	911 or (575) 758-4656
New Mexico State Police	911 or (575) 758-8878
EPA Region VI Emergency Response (24-hr hotline)	(866) 372-7745
National Response Center	(800) 424-8862
Centers for Disease Control & Prevention	(800) 232-4636
Poison Information Center	(800) 222-1222
New Mexico Poison Center	(505) 272-2222
NMED Hazardous Waste Bureau	(505) 476-6000
NMED Resource Recovery Bureau	(505) 827-0197

Table 3
Landfill Gas Action Levels & Response

Gas	Action Level	Response
Methane - Concentration	$\geq 0.5\%$ in air ($\geq 5,000$ ppmv)	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Evacuate the site if levels are exceeded in the support zone. Contact the Town of Taos authorities as well as the Taos Fire Department if persistent exceedances are measured in the support zone.
Methane - Lower Explosive Limit (LEL)	$\geq 10\%$ of the LEL	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Evacuate the site if levels are exceeded in the support zone. Contact the Town of Taos authorities as well as the Taos Fire Department if persistent exceedances are measured in the support zone.
Oxygen	$\leq 19.5\%$	Stop work and excavate the exclusion zone until levels are above the action level for a period of at least 15 minutes. Re-visit HASP and establish better engineering controls (slow down waste excavation to allow landfill gas to disipate and and oxygen to enter excavation area, etc.). As a last resort prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Carbon Dioxide	$\geq 1\%$ (10,000 ppmv)	Stop work and excavate the exclusion zone until levels are below the action level for a period of at least 15 minutes. Re-visit HASP and establish better engineering controls (slow down waste excavation to allow landfill gas to disipate and and oxygen to enter excavation area, etc.). As a last resort prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Hydrogen Sulfide	≥ 10 ppmv	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Establish better engineering controls and/or (as a last resort) prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Volatile Organics	> 10 ppmv	Notify Town of Taos authorities. Inspect excavation and exposed waste for possible sourceas and evaluate whether samples for laboratory analysis are warranted. Proceed with work in Level D PPE while further assessing conditions.
	> 50 ppmv	Stop work and prepare to go to modified Level C respiratory protection. Confirm that hydrogen sulfide levels are not exceeded prior to re-entry.

Note: A photo-ionization detector (PID) only detects voloatile organic compounds (VOCs) with an ionization potential below the range of the lamp (typically 10.6 electron volts). Without knowing the specific VOC resulting in a PID reading, a conservative approach to respiratory protection in necessary.

Appendix A – NMED-RRB Waste Excavation Checklist

Waste Excavation Checklist

Background Summary

- Facility or project description, location and reason for the excavation

NMED Notification Prior to Commencement of Scheduled Activities

Schedule of Proposed Activities

Exploratory Pit Locations

- Plan view map with landfill boundaries, observations, objects encountered, soil vapor PID results (plan view with concentrations)

Waste Removal (Describe in Detail)

- How waste will be removed
- How stockpiling of waste will be avoided
- How, if necessary, temporarily stockpiled waste will be restricted from public access and covered, and what preventative measures will be taken to preclude soil or groundwater contamination
- Equipment to be used
- Screening equipment (if applicable)
- Type of trucks and owner(s)
- Protection mechanisms to prevent slope failure of the excavation (OSHA compliance)
- Dust control mechanisms (e.g., use of water, tarping, avoiding work at periods of high winds)
- Personnel that will be dedicated to monitoring excavation activities
- Type(s) of waste to be excavated or anomalies that will trigger cessation of excavation or monitoring

Air Monitoring

- Compliance with local laws/ordinances
- Types of air monitoring devices to be utilized, frequency of sampling
- Procedures to ensure worker safety during monitoring, sampling, and excavation activities

Personal Protective Equipment

- Required PPE to be used during excavation activities and protection levels, as appropriate

Hazard Assessment

- Chemicals and contaminants that may be encountered, potential health hazards, associated symptoms, and proposed response to such situations

Site Perimeter and Security

- Means of restricting or cordoning off excavated areas (during operations and at the end of each day)
- General site security procedures, to include description of exclusion zone(s) to be implemented

Letter from Landfill Acknowledging Acceptance of the Excavated Waste

Verification of Commercial Waste Hauler Registration for Hauler(s)

Work Limitations

- Anticipated days/hours of excavation activities, personnel shifts, weather conditions that would result in cessation of work

Emergency Contact Log and Directions & Route Map to Nearest Hospital

Key Project Personnel and Emergency Telephone Numbers

- Identification of the Site Safety Officer and other supervisory personnel
- Telephone numbers for nearby fire and police departments/substations, hospital(s), poison information center, NMED's 24-hour emergency reporting, and the local NMED Solid Waste Bureau's enforcement officer

******NOTE: All Waste Excavation Plans must address, but shall not necessarily be limited to, all of the items listed above.***

Appendix B – Health & Safety Plan (HASP)

WASTE EXCAVATION HEALTH & SAFETY PLAN (HASP)

LOCATION:

Taos Regional Landfill
2460 US-64, Taos
Taos County, New Mexico

PREPARED FOR:

New Mexico Environment Department
Resource Recovery Bureau
1190 St. Francis Drive - P.O. Box 5469
Santa Fe, 87502-5469

PREPARED BY:

Souder, Miller & Associates (SMA)
5454 Venice Ave. NE, Suite D.
Albuquerque, New Mexico
(505) 299-0942

DATE:

November 2025

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Health & Safety Plan (HASP)

Waste Excavation

Taos Regional Landfill

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ATTACHMENT A

NEAREST HOSPITAL ROUTE & DIRECTIONS



1.0 INTRODUCTION

This Health and Safety Plan (HASP) is submitted by Souder, Miller & Associates as part of the Waste Excavation Plan (WEP) and is intended to establish emergency action procedures in the event of an accident while conducting waste removal operations at the Taos Regional Landfill. The Taos Regional Landfill is located on the south side of Highway 64 approximately 5 miles northwest of Taos, New Mexico. Adequate planning is needed prior to performing waste excavation in order to reduce the risk of worker injury or illness from exposure to potential risks at the landfill. This HASP is designed to provide health and safety criteria for the protection of on-site personnel, the public and the environment from physical, biologic/pathologic and chemical hazards that may be associated with waste excavation activities. The specific activities to which this HASP applies includes the excavation, loading, hauling and disposal of waste material. The purpose of this HASP is to provide personnel protection standards and mandatory safety practices while performing waste excavation activities. This HASP addresses the following regulations and guidance:

- OSHA Safety and Health Standards, 29 CFR 1910/1926, U.S. Department of Labor, Occupational Safety and Health Administration, OSHA 2207, 1985
- OSHA Interim Final Standards, 29 CFR 1910.120
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH/OSHA/EP NUSCG, DHHS, (NIOSH) Publication No. 85-115, 1985

The City of Taos Solid Waste Administration (SWA) and/or and independent contractor (if selected) will provide waste excavation and transportation services for this project and will be responsible for implementing the HASP. Other, more stringent, guidelines may be implemented by the City of Taos SWA and/or an independent contractor. A Site Safety Officer will be selected prior to WEP approval and use of the HASP for waste excavation activities.

2.0 SITE DESCRIPTION & BACKGROUND

The Taos Regional Landfill is located on the south side of Highway 64 approximately 5 miles northwest of Taos, New Mexico. Construction of disposal cells 3B and 4 will require excavation of buried waste on the margin of the old landfill to the west of the new cells. In order to install the new cell liner and anchor trench, approximately 8,000 in-situ cubic yards of waste is required to be excavated from the northeastern margin of the old landfill and potentially from the margin of existing cell 3A and transported to the active landfill face in Cell #3A for proper disposal.

3.0 SITE HAZARD SUMMARY

Based on an understanding of current site conditions, the following health and safety hazards may potentially be encountered during waste excavation activities:

- Exposure (inhalation or skin contact) to contaminated waste and/or soil,
- Presence of flammable/combustible vapors,
- Heat stress due to protective clothing and environmental conditions,
- Physical hazards inherent to excavation operations and landfill debris,
- Hazardous wastes or petroleum products that may have been deposited at the landfill,
- Methane gas generation from within the landfill,
- Hydrogen sulfide gas (H₂S)



- Slope failure during waste excavation, and
- Oxygen deficient atmosphere within excavation area.

3.1 Chemical Exposure

The waste material and soils excavated at the Taos Regional Landfill has the potential to contain various chemicals. The potential exists for exposure to hazardous compounds in either solid, liquid or vapor form from landfill gasses, metals, petroleum products and volatile organic compounds (VOCs).

3.2 Physical Hazards

Physical hazards are inherently present during any excavation operation and slope stability is particularly an issue during the excavation of waste material. Additional physical hazards present at the landfill site may include debris (glass, metal, concrete, etc.), mechanical hazards, noise associated with the operation of heavy equipment, slip-trip-fall hazards associated with field operations, and skeletal-muscular injury hazards associated with field operations.

Site workers must be aware of heavy equipment at all times. Heavy equipment working on-site should always be given the right-of-way. Workers are to be conscious of swinging booms from track-hoes and other pieces of heavy equipment. Designated traffic paths for heavy equipment and haul trucks will be established. Heavy equipment will be outfitted with backup alarms and all workers on-site will be required to wear high-visibility safety vests.

3.3 Weather

Weather conditions play an important consideration in planning and conducting waste excavation activities. Most importantly rain-fall events could potentially lead to storm water funneling into the excavation and saturated waste material would significantly reduce slope stability. Very windy conditions could result in blowing trash and reduced visibility. At the discretion of the Site Safety Officer, work will cease in the event of a rainfall event (or if the potential for a rainfall event exists) and the postponement of work during windy conditions will be at the discretion of the City of Taos SWA. Extremely hot or cold weather can also cause or contribute to physical discomfort, loss of efficiency and personal injury.

4.0 ACCIDENT PREVENTION

The Project Manager will be responsible for implementation of an accident prevention plan. All on-site personnel will be accountable for reading, understanding, and following the guidelines provided in the accident prevention plan. The accident prevention plan should be similar to those prepared for other excavation sites.

- Site-specific training will be provided to all site personnel prior to initiation of work at the Taos Regional Landfill.
- A designated person will be responsible for maintaining a clean job site- free from hazards and providing safe ingress and egress from the site.
- Physical barriers delineating the work site will be used for traffic control and to limit access to the restricted work area (excavation area).



- Emergency telephone numbers will be available on-site and the location of the emergency telephone numbers will be made available to all site personnel. A mobile/cellular telephone will be in use at the site in the event of an emergency. Emergency assistance can be obtained using the 911 telephone number. The closest hospital to the work site is the Taos Urgent Care (telephone: (575) 758-1414). A map to the hospital is attached to this HASP.
- At the beginning of each workday, a tailgate health and safety meeting will be held to discuss relevant site-specific information or changed conditions.

A portable eyewash station and a first aid kit will be maintained on-site and if a minor accident occurs, limited first aid will be provided on-site. If appropriate, 911 will be contacted for assistance in an emergency situation. All occupational injuries or illnesses will be reported.

5.0 ASSIGNMENT OF RESPONSIBILITIES

The assignment of health and safety responsibilities will be provided by the Taos SWA and/or and independent contractor.

Project Manager

- Ensuring that health and safety requirements are met and HASP is implemented;
- Briefing field teams on specific duties;
- Controlling site access;
- Serving as liaison with all associated parties;
- Implementing the HASP in compliance with OSHA standards and with general health and safety policies;
- Modifying and/or developing new health and safety procedures as necessary;
- Maintaining medical surveillance procedures as outlined;
- Selecting the proper level of PPE and clothing, and ensuring proper use by all on-site employees;
- Regularly inspecting all personal protective equipment (PPE) and providing proper maintenance and storage of PPE;
- Monitoring all on-site workers for signs of stress;
- Preparing and submitting the required health and safety, monitoring, accident logs and reports; and
- Conducting as needed safety briefings and site-specific training for on-site medical care and services.

Monitoring Personnel (Souder, Miller & Associates)

- Development of the HASP;
- If observed, notify the Project Manager of any potentially unsafe conditions;
- Provide field screening and visual observation of debris that is excavated from the site; and
- Attend site safety meetings.

On-Site Supervisor

- Verify that health and safety requirements are met;
- Regularly inspect PPE and provide for proper maintenance and storage of PPE;



- Brief field teams on specific duties;
- Control site access;
- Implement the HASP in compliance with OSHA standards;
- Modify and/or develop new health and safety procedures as necessary;
- Ensure that all on-site personnel have been certified as physically fit to perform field work;
- Maintain medical surveillance procedures as outlined;
- Monitor all on-site workers for signs of stress; and
- Ensure on-site implementation of the HASP.

6.0 PERSONNEL TRAINING

All personnel must be aware of the potential hazards and health and safety training is considered necessary prior to working on the site. Training should meet the requirements of OSHA 29 CFR 1910.120 (e) regarding:

- General site safety responsibilities;
- Medical surveillance program;
- Review of the HASP;
- Potential chemical/physical hazards;
- PPE and respiratory protection equipment (if required);
- Personnel/equipment decontamination procedures; and
- Emergency assistance network.



7.0 MEDICAL SURVEILLANCE PROGRAM

While not anticipated for this project, medical monitoring of personnel is necessary to determine medical fitness if the use of respiratory protection is required. Persons assigned to tasks requiring the use of respirators shall have a local physician make a determination of their health and physical condition pertinent to the use of a respirator and performing fieldwork while wearing a respirator. If appropriate (an employee wears a respirator more than 30 days per year), the employer shall prepare and implement a written respiratory protection program per OSHA 29 CFR 191 0.134. Employees shall be fit-tested for their respirators.

Medical surveillance is also required under OSHA 29 CFR 191 0.120(f). Medical examinations and consultations are required for all employees engaged in work operations where a potential for exposure to hazardous materials exists. Medical examinations require a medical and work history with special emphasis on symptoms related to exposure to hazardous substances.

Prior to starting work, an emergency medical assistance network will be established. This involves identifying the fire department, ambulance service and hospitals near the landfill. Emergency assistance can be obtained using the 911 telephone number. Section 11.3 lists various emergency telephone numbers and a map with driving directions to the Gerald Champion Regional Medical Center, which is the closest emergency care facility to the landfill, is attached to this HASP. Additionally, a vehicle shall be available on-site during all waste excavation activities to transport personnel with minor injuries to the identified emergency medical facility.

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based on an evaluation of potential hazards, Level D PPE has been initially designated for this project. Section 9.4 (Air Monitoring) has provisions for upgrading the level of protection to Level C (if conditions mandate). For this project, Level A PPE and Level B PPE are not anticipated and if those levels of protection become necessary, work will be stopped and a specialty contractor will be brought on-site to mitigate the hazard.

8.1 Level D Personal Protective Equipment

Personnel working at the project site shall wear at a minimum:

- Work uniforms;
- Steel-toe safety boots (leather or chemical resistant);
- Hard hat;
- Safety glasses;
- Safety vests for visibility; and
- Leather gloves, chemical-resistant gloves (i.e., nitrile or PVC) may be mandated when handling or sampling potentially hazardous or contaminated materials.

8.2 Level C Personal Protective Equipment

When air-monitoring equipment indicates that a particular area contains potentially hazardous concentrations of compounds, PPE will be upgraded to Level C protection. Under Level C, personnel shall wear as a minimum:

- All Level D personal protective equipment plus;



- Half-face air purifying respirator equipped with dual HEPA/organic vapor cartridges (MSHA-NIOSH approved) – ***AS LONG AS SUFFICIENT OXYGEN IS PRESENT.***

Level A and Level B environments are not anticipated for this project. If field-monitoring equipment indicates that a Level A or a Level B environment is present, work will be stopped and the situation will be reviewed.

8.3 Respirator Selection & Fit Test

Prior to the use of respirators at the site, the Project Manager will check that site personnel have recently been fit-tested for air purifying respirators. This action will be conducted in the event that an upgrade is required from Level D PPE. All respiratory equipment usage shall be in compliance with the requirements of the OSHA respiratory standard (29 CFR 1910.134).

9.0 HAZARD ASSESSMENT & CONTROLS

A hazard assessment shall be performed by the Project Manager to evaluate what control measures are necessary during this project. This will involve characterization of chemical, biologic/pathologic, physical, and other health and safety hazards at the site. The hazard assessment is an on-going process and will be conducted throughout the project.

9.1 Area Survey

The Project Manager shall conduct a physical survey of the work site to evaluate appropriate control measures.

9.2 Screening for Hazardous Waste

The excavated waste will be monitored for potentially hazardous substances. Any suspicious items shall be set aside for possible testing and determination of suitable disposal. Representative samples of waste that may be suspected of containing regulated chemicals will be screened with a photo-ionization detector (PID) for the presence of VOCs (only VOCs with an ionization potential of <10.6 electron volts (eV)). If visual or field screening methods indicate evidence of possible hazardous waste, a representative sample may be collected and analyzed using the appropriate laboratory method(s) based on the type of suspected hazard present.

9.3 Air Monitoring

The main objective of air monitoring is to assess the potential inhalation hazard to site personnel and to determine appropriate levels of personal protection. Air monitoring will be conducted to evaluate potentially explosive atmospheres. Data obtained will also be used to assess the potential for detectable off-site releases of contaminants. Air monitoring will be conducted in excavations for VOCs using a direct-reading PID (10.6 eV lamp or greater). Organic vapor levels will also be measured outside the excavation area, upwind from the work site in an effort to establish background readings.

Frequency of monitoring will be based upon background levels, initial sampling results and recommendations of the project Site Safety Officer.



9.4 Air Monitoring Action Levels

Gas	Action Level	Response
Methane - Concentration	≥ 0.5% in air (≥ 5,000 ppmv)	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Evacuate the site if levels are exceeded in the support zone. Contact the Town of Taos authorities as well as the Taos Fire Department if persistent exceedances are measured in the support zone.
Methane - Lower Explosive Limit (LEL)	≥ 10% of the LEL	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Evacuate the site if levels are exceeded in the support zone. Contact the Town of Taos authorities as well as the Taos Fire Department if persistent exceedances are measured in the support zone.
Oxygen	≤ 19.5%	Stop work and excavate the exclusion zone until levels are above the action level for a period of at least 15 minutes. Re-visit HASP and establish better engineering controls (slow down waste excavation to allow landfill gas to disipate and and oxygen to enter excavation area, etc.). As a last resort prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Carbon Dioxide	≥ 1% (10,000 ppmv)	Stop work and excavate the exclusion zone until levels are below the action level for a period of at least 15 minutes. Re-visit HASP and establish better engineering controls (slow down waste excavation to allow landfill gas to disipate and and oxygen to enter excavation area, etc.). As a last resort prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Hydrogen Sulfide	≥ 10 ppmv	Stop work and excavate the exclusion zone until levels are below the action level. If the action level is exceeded in the CRZ, evacuate the support zone. Evacuate the site if levels are exceeded in the support zone. Establish better engineering controls and/or (as a last resort) prepare to implement a respiratory protection plan (forced air) prior to re-entry.
Volatile Organics	> 10 ppmv	Notify Town of Taos authorities. Inspect excavation and exposed waste for possible sourceas and evaluate whether samples for laboratory analysis are warranted. Proceed with work in Level D PPE while further assessing conditions.
	> 50 ppmv	Stop work and prepare to go to modified Level C respiratory protection. Confirm that hydrogen sulfide levels are not exceeded prior to re-entry.

Note: A photo-ionization detector (PID) only detects voloatile organic compounds (VOCs) with an ionization potential below the range of the lamp (typically 10.6 electron volts). Without knowing the specific VOC resulting in a PID reading, a conservative approach to respiratory protection in necessary.



9.5 Heat Stress Monitoring

The stress of working in a hot environment can cause a variety of illnesses including heat exhaustion or heat stroke; the latter can be fatal. The use of PPE can significantly increase heat stress. Hazards associated with heat stress include the following:

- *Heat Rash* - may result from continuous exposure to heat or to humid air.
- *Heat Cramps* - caused by heavy sweating with inadequate electrolyte replacement. Heat cramps can cause muscle spasms and pain in the hands, feet, and abdomen.
- *Heat Exhaustion* - occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Heat exhaustion can cause pale, cool, moist skin; heavy sweating; dizziness; nausea; and fainting.
- *Heat Stroke* - the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Heat stroke can cause red, hot unusually dry skin. Symptoms include lack of (or reduced) perspiration, nausea, dizziness, confusion, strong rapid pulse, and coma.

Employees who experience these symptoms should take prompt action. Severe exposures to heat stress conditions can lead to heat stroke.

9.6 Control of Heat/Cold Stress Conditions

The Project Manager or Site Safety Officer will monitor worker activity and will stop employee work activity when signs of heat or cold stress conditions warrant. Employees shall report any signs and symptoms of heat or cold stress to the Project Manager or Site Safety Officer.

Control measures to prevent cold stress include:

- Proper clothing
- Appropriate work schedule

Control measures to prevent heat stress include:

- Adequate intake of fluids, preferably cool water
- Work/rest regimen with rest periods taken in a cool shaded area
- In extreme conditions, cooling vests can be worn

Any employees working in chemical-resistant protective clothing will be observed for the following signs and symptoms of heat stress: dizziness and nausea; profuse sweating; skin color change; vision problems; fainting; weakness; fatigue; cramping; and hot, red, dry skin. Any team member who exhibits these symptoms will be monitored for heat stress. Heat stress monitoring will consist of measuring heart rate and/or body temperature (alternative) to monitor for the onset of heat stress illness.

Heart rate (HR) will be measured by the radial pulse at the wrist for thirty seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats per minute. If the HR is in excess of the above guideline, the next work period will be shortened by one-



third, while the length of the rest period stays the same. If the pulse rate is in excess of 110 beats per minute at the beginning of the next rest period, the following work cycle will be further shortened by one-third.

Body temperature will be measured with a temperature sensitive strip placed on the worker's forehead as early as possible in the resting period. Strip temperature should not exceed 99.7°F. If the forehead temperature exceeds 99.7°F, the next work period will remain the same for one work interval. However, if the forehead temperature is in excess of 99.7°F at the beginning of the next rest period, the following work cycle will be further shortened by one-third. Forehead temperature will be measured again at the end of the rest period to assure that it has decreased to below 99.7°F. Under no circumstances will a worker be allowed to wear impermeable or semi-permeable garments if his/her temperature exceeds 100.6°F.

Workers experiencing heat stress that is not relieved by rest period/work period modifications will be removed from field work and be required, if conscious, to consume two to four pints of electrolyte fluid or cool water every hour while resting in a shaded area. The individual should not return to work until heat stress symptoms are no longer recognizable. If the symptoms appear critical, persist, or get worse, medical attention will be sought.

9.7 Noise Monitoring

During site activities, the Project Manager or Site Safety Officer may conduct noise monitoring during various tasks throughout the project. An initial survey may be conducted using a sound level meter to determine compliance with the OSHA hearing conservation standard (29 CFR 191.0.95).

Disposable hearing protection devices shall be made available to site personnel upon request. If measured noise levels exceed 85 dB(A), hearing protective devices shall be worn by all site personnel within the affected work zone. Use of portable "Walkman-type" radios is prohibited at any time. A copy of the OSHA Occupational Noise Standard, 29 CFR 1910.95 shall be made available to employees upon request.

9.8 Physical Hazard Control

Physical hazards are inherently present during construction operations. Physical hazards present at the project site will include mechanical and noise hazards associated with the operation of construction equipment, slip-trip-fall hazards associated with construction sites, and skeletal-muscular injury hazards associated with physical labor.

- **HEAVY EQUIPMENT OPERATION:** Safety hazards associated with the operation of heavy equipment can be effectively reduced by the employee if a constant awareness of these hazards is maintained. Constant visual or verbal contact with the equipment operator will facilitate such awareness.
- **SLIP-TRIP-FALL HAZARDS:** While it is difficult to prevent slip-trip-fall hazards, risk of injury can be reduced by implementing proper site control measures such as daily safety meetings, proper footwear and by keeping the work area free of obstructions. Special care shall be taken around



decontamination areas where water has accumulated on polyethylene sheeting, creating slippery conditions.

- **LIFTING HAZARDS:** Field operations often require heavy physical labor tasks to be performed. All employees will be instructed in proper lifting techniques. Additionally, employees will be instructed to not attempt to lift large or heavy objects (in excess of 70 pounds) without assistance.
- **TOOL AND EQUIPMENT HAZARDS:** Safety hazards present during the use of tools and equipment are generally associated with improper tool handling and inadequate maintenance. Management of these hazards involves rigorous maintenance of tools and equipment and effective training of employees in the proper use of these tools.
- **FIRE HAZARDS:** Proper fire safety controls measures such as no smoking or hot work in the excavation area shall be strictly maintained. An ABC dry chemical fire extinguisher will be located at the project site. The Taos Fire Department can be contacted by dialing "911".
- **SLOPE STABILITY HAZARDS:** Excavation and trench safety will be monitored and sloping requirements promulgated by OSHA shall be enforced. The maximum slope of waste side walls will be maintained at 3:1. Stormwater could funnel down into the excavation and saturation of the waste material could significantly reduce slope stability. Therefore, no waste excavation work will be performed during any rainfall events and slope stability will be assessed prior to re-entry into the waste excavation area following a rainfall event. Postponement of work due to rainfall events, or potential for a rainfall event, will be at the discretion of the Site Safety Officer.

10.0 SITE CONTROL

Site control requires the establishment of an exclusion zone, contaminant reduction zone (CRZ), support zone and an emergency evacuation protocol. To minimize the exposure of personnel and the public to the work site and potentially contaminated material, site control procedures are required. Safety procedures for preventing or reducing the potential of exposure of personnel to potentially contaminated excavations or materials are:

- Set up physical barriers to exclude unnecessary personnel from the excavation area.
- Set up physical barriers to exclude unnecessary personnel from the hazardous material holding area (if required).

10.1 Emergency Protocol

The Project Manager or Site Safety Officer shall take the following action upon occurrence of an emergency:

- **ACCOUNTING FOR PERSONNEL:** The Project Manager or Site Safety Officer will designate a person to account for personnel and inform outside emergency response teams when personnel are believed missing.
- **FIRE:**
 1. Maintain the safety of employees in the immediate vicinity of the fire.
 2. Call for assistance from the fire department (911). Additional emergency phone numbers are provided in Section 11.3. The following information should be provided to the 911 emergency operator upon calling:



- a. Name of person calling
 - b. Phone number of phone calling from
 - c. Location of incident
 - d. Nature of incident (fire, explosion, cave-in, injury, vehicle accident)
 - e. When the incident occurred
 - f. Type of assistance needed (fire, rescue, law enforcement)
 - g. Number of persons needing assistance
 - h. Extent of injuries (if known)
3. If it can be done safely, proceed to extinguish the blaze with portable fire-fighting equipment available at the site. Persons with a potential for using fire extinguishers shall receive proper training.
- ACCIDENT OR INJURY:
 1. Depending on the severity of the injury, treatment may either be given at the site by trained personnel (additional assistance from an emergency medical technician may be required) or the victim may have to be transported to a hospital.
 2. Call for medical assistance (911). Emergency telephone numbers are presented in Section 11.3. The following information should be provided to the 911 emergency operator upon calling:
 - a. Name of person calling
 - b. Phone number of phone calling from
 - c. Location of incident (address if available)
 - d. Nature of incident (fire, explosion, cave-in, injury, vehicle accident)
 - e. When the incident occurred
 - f. Type of assistance needed (fire, rescue, law enforcement)
 - g. Number of persons needing assistance
 - h. Extent of injuries (if known)
 3. Report any incident, no matter how minor, to the Project Manager or Site Safety Officer.
 - SITE EVACUATION: The Project Manager or Site Safety Officer are responsible for determining if circumstances exist which require evacuation, and should always assume worst case conditions until proven otherwise. Evacuation routes from the site shall be established and communicated to all personnel during the daily safety meetings and at the initial safety briefing. During an emergency, the Project Manager or Site Safety Officer shall ensure that all personnel are evacuated from the site and accounted for at a predetermined meeting location. In the event of a fire or other emergency, action shall be taken to address the emergency following the accounting of all personnel. Personnel will be evacuated up-wind of the site. Three stages of evacuation are as follows:
 1. Withdraw from the exclusion zone if:
 - a. Landfill gas action levels are exceeded (see "Response" in Section 9.4)
 - b. Occurrence of a minor accident - field operations will resume after first aid and/or decontamination procedures have been administered.
 - c. Equipment malfunctions, including protective clothing and respirators (if required).



2. Withdraw from the CRZ if:
 - a. Landfill gas action levels are exceeded (see “Response” in Section 9.4)
 - b. A major accident or injury occurs.
 - c. A fire and/or explosion occurs.
3. Withdraw from support zone:
 - a. A catastrophic event occurs. The Project Manager or Site Safety Officer is responsible for determining if circumstances exist for an area wide evacuation and should always assume worst-case conditions until proven otherwise.

When evacuating a HAZWOPER site, always move up-wind. Therefore, two alternative assembly sites may be designated. The Project Manager will be responsible for verifying that all personnel are present and SMA will provide perimeter monitoring.

10.2 Site Inspections

The inspection of the site must be performed initially by the Project Manager or Site Safety Officer and prior to the initiation of each workday by a site supervisor. An evaluation must be conducted with regards to the activity that may generate a hazard within the workspace.

10.3 3rd Party Safety

Site access will be strictly controlled such that only authorized personnel, subcontractors (if any), and previously approved visitors will be allowed in work areas containing potentially hazardous materials or conditions. Only the Project Manager or Site Safety Officer will have the authority to escort third parties on-site.

10.4 Emergency Communications

Emergency communications equipment will be provided at the site to notify field personnel and local authorities of an emergency. A telephone will be maintained at the site for emergency communications. The Project Manager or Site Safety Officer will use this telephone to report emergencies to local authorities such as medical, fire, police, and to notify outside emergency response teams.

11.0 GENERAL SAFETY REQUIREMENTS

Field personnel will comply with all federal, state, and local safety codes, ordinances, and regulations in order to maintain safe working conditions at the job site. All personnel will be responsible for reporting unsafe working conditions to the Project Manager or Site Safety Officer.

All health and safety questions or enquiries, no matter how small, must be addressed to the Project Manager or Site Safety Officer immediately. Prompt reporting is critical so as to provide field personnel the proper information, first aid, or other medical treatment as required. Hazard assessment is a continual process and on-site personnel must be aware of their surroundings and constantly be aware of potential chemical and physical hazards that may be present.



11.1 General Safety Policies & Procedures

- There shall be no intoxicating substances of any kind permitted on or near the job site (i.e., alcohol, illegal/illicit drugs, etc.). Under no circumstances will anyone known to be under the influence of intoxicating substances be allowed on the job site (violators are subject to dismissal).
- No firearms or other weapons shall be permitted on the job site (violators are subject to dismissal).
- Fighting, scuffling, or horseplay is prohibited while on the job site (violators are subject to dismissal).
- No field personnel shall enter underground vaults, tanks, silos, manholes, excavation, or any confined space until it has been determined that the air contains no flammable or toxic gases or vapors and that oxygen is above 19.5%. This determination can only be made by the Project Manager or Health and Safety Officer.
- All equipment, (i.e., electrical and gas fueled) water lines, steam lines, and gas lines shall not be turned on or set in motion without carefully checking to assure that no person could be injured by such action, and use of such equipment should only be by authorized personnel.
- All personnel are responsible for practicing personal hygiene and are expected to wash hands, face, and forearms thoroughly prior to eating, drinking, smoking and use of rest room facilities.
- No smoking, eating, drinking, or chewing tobacco or gum shall be allowed on the work site. This measure is to decrease the probability of hand-to-mouth transfer and ingestion of hazardous materials.
- Good housekeeping is essential because of the work site conditions. Every effort will be made to ensure the site is maintained in a clean and safe condition at all times.
- No worker shall be allowed to work alone at any time in or immediately near an excavation and/or construction area. Another worker must be present outside the work area due to the possible effects of suspected health hazards.
- All motors used in the excavation area shall be explosion proof.
- No hot work shall be permitted within 50 feet of the excavation or work area.
- All refuse or other material excavated during field activities shall be properly disposed of at a legal point of disposal (Cell #4).
- Equipment shall be bonded and grounded, spark proof and explosion resistant, as appropriate.
- Contact with potentially contaminated substances, kneeling on the ground, or leaning, sitting, or placing equipment on the contaminated soil is not allowed.

11.2 Fire Safety

- Entrances to the job site must not be obstructed. In the event of an emergency, response vehicles must have a means of access to the work site.
- The use of gasoline as a cleaning solvent is strictly forbidden. If cleaning of tanks, machinery, or other equipment is necessary, a steam cleaner shall be brought on site.
- No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel, even if there are openings in it, until it has first been determined by the Site Safety Officer that there is no possibility of explosion. Authorization for such work must be obtained from the Project Manager or Site Safety Officer.



11.3 Emergency Telephone Numbers & Signature/Acknowledgement Form

<u>AGENCY</u>	<u>TELEPHONE NUMBER</u>
EMERGENCY	911
TAOS URGENT CARE	(575) 758-1414
TAOS FIRE DEPARTMENT	(575) 758-3386
TAOS POLICE DEPARTMENT	(575) 758-2216
NEW MEXICO STATE POLICE	(505) 829-9300
POISON INFORMATION CENTER	(800) 222-1222
EPA EMERGENCY RESPONSE TEAM (REGION VI)	(866) 372-7745
NATIONAL RESPONSE CENTER	(800) 424-8862
CENTER FOR DISEASE CONTROL & PREVENTION	(800) 232-4636
NMED HAZARDOUS WASTE BUREAU	(505) 476-6000

CALL SMA **(877-299-0942)** AFTER NOTIFICATION OF EMERGENCY ASSISTANCE. INFORM OFFICE OF THE NAME OF INJURED PARTY OR THE NATURE OF THE INCIDENT. IF INJURED WORKER IS A CONTRACTOR OR SUBCONTRACTOR, INSTRUCT SMA PERSONNEL TO INFORM CONTRACTOR OR SUBCONTRACTOR OF THE INCIDENT.

BY SIGNING BELOW I SIGNIFY THAT I HAVE BEEN BRIEFED ON AND FULLY UNDERSTAND THE PRECEDING HEALTH AND SAFETY PLAN FOR ON-SITE ACTIVITIES.

NAME (PRINTED)	SIGNATURE	REPRESENTING	DATE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			



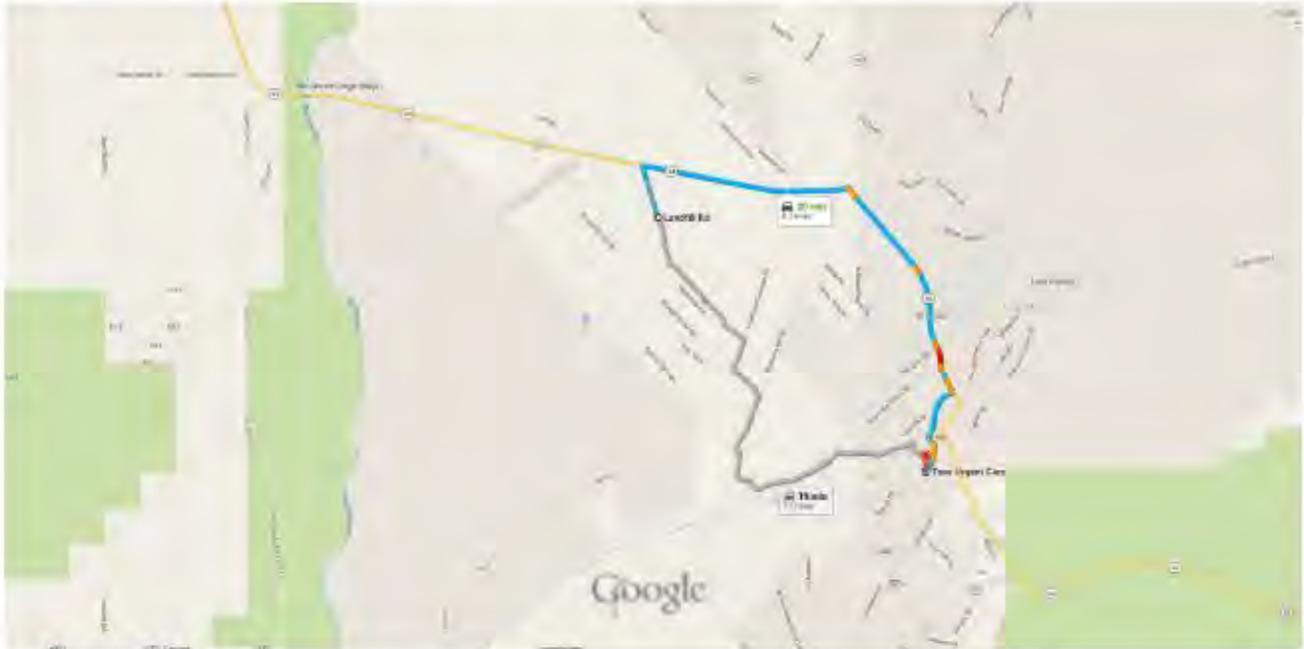
ATTACHMENT A - NEAREST HOSPITAL ROUTE & DIRECTIONS



Google

Landfill Rd, El Prado, NM 87529 to Taos Urgent Care

Drive 8.3 miles, 20 min



Map data ©2015 Google 1 mi

Landfill Rd

El Prado, NM 87529

- ↑ 1. Head north on Landfill Rd toward US-64 E 0.8 mi
- ↘ 2. Turn right onto US-64 E 2.9 mi
- ↘ 3. Turn right onto US-64 E/Paseo Del Pueblo Norte 3.4 mi
- ↘ 4. Turn right onto Cam De La Placita 0.8 mi
- ↑ 5. Cam De La Placita turns slightly left and becomes NM-210 0.1 mi
- ↘ 6. Slight right toward NM-68 S/Paseo Del Pueblo Sur 95 ft
- ↘ 7. Turn right onto NM-68 S/Paseo Del Pueblo Sur 0.4 mi
Destination will be on the right

Taos Urgent Care

330 Paseo Del Pueblo Sur, Taos, NM 87571



EXHIBIT A

Geotechnical Investigation Report

Note: The following clarification is made within the Standard General Conditions (Article 5.03.B) in regard to the “technical data” provided in this Exhibit.

- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to
1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.



POB 1015
BERNALILLO NM 87004

Laboratory & Field Testing Services

505-867-6585

ACNM-NMSHTD & NICET Certified

Mr. Ewan Young, PM
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East, Bldg. 100
Santa Fe, New Mexico 87505

23 April 2014

Dear Ewan,

Enclosed please find:

Laboratory Reports: 7 Samples Delivered.
Particle Size Distribution Analyses:
ASTM C 117, C 136
Moisture-Density Relationships:
ASTM D 698
Hydraulic Conductivity Analyses
ASTM D 5856

Referenced Project:

Taos Area Landfill
Various Cells and Proposed Fill Areas

Thank you for the opportunity to provide this service.

Respectfully submitted,

E. Junker
ACS

Enclosures: _1 Set plus 1 copy set.
/ej



PARTICLE SIZE DETERMINATION
ASTM C 117 / 136

VISUAL DESCRIPTION:	Moist: Sample No.1	DATE 04 12 14
	Brown Silty Sandy GRAVEL	CLIENT Souder, Miller & Asso
SAMPLE LOCATION:	By Client	PROJECT TAOS LANDFILL
	E of S1/3 of Cell 2	Taos County, NM
CLASSIFICATION	USCS	PERMIT
% MOISTURE:	11.0%	CONTRACT Area 1
% PASSING # 200:	17.5%	JOB Final Cover
		FILE 1464001

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf						N	

TOTAL	25.27	Kg	FINE		Moisture
			WET WGT.	Grams	
Coarse	8.99	Kg	480.9		186.90
Fine excess	15.85	Kg	433.4	BEFORE WASH	168.44
C+Fe+F	25.27	Kg	317.2	AFTER WASH	11.0%

Kg	SIEVE SIZE	3"	1 1/2"	3/4"	1/2"	3/8"
		75 mm	38 mm	19 mm	12.5 mm	9.5 mm
	Cum Wgt	0.90	2.60	5.87	7.61	8.99
	Retained	4%	10%	23.2%	30.1%	35.6%
	Passing	96%	90%	77%	70%	64%
	Specified					

g	SIEVE SIZE	No. 4	No. 10	No. 40	No. 200	Pan
		4.75 mm	2.00 mm	0.425 mm	.075 mm	
	Cum Wgt	48.3	111.2	219.6	315.6	317.2
	Retained	42.8%	52.1%	68.2%	82.5%	0.0
	Passing	57%	48%	32%	17.5%	
	Specified					grams



POB 1015
BERNALILLO NM 87004

Laboratory & Field Testing Services

505-867-6585

ACNM-NMSHTD & NICET Certified

DATE 04 12 14
CLIENT Souder, Miller & Asso.
PROJECT TAOS LANDFILL
Taos County, NM
PERMIT
CONTRACT
JOB Final Cover
FILE 1464002

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill	Moist:
Client Sampled: Area 1	Brown Silty, Sandy GRAVEL
Sample No. 1	E of S1/3 of Cell 2
CLASSIFICATION	USCS
Tested at: 101.2	lbs/ft ³
% Passing # 200 Sieve	17.5%
% Retained on 3/4" Sieve	23.2%
Maximum Dry Density	lbs/ft ³
Optimum Moisture	of Dry Weight
% Compaction of Maximum Density	, Hydrated w/ deAired, distilled
COEFFICIENT OF PERMEABILITY, cm/sec: K	2.33 X 10 ⁻³
Corrected Coefficient PERMEABILITY, cm/sec: K _{20°}	2.24 X 10 ⁻³



**PARTICLE SIZE DETERMINATION
ASTM C 117 / 136**

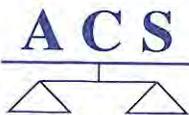
VISUAL DESCRIPTION:	Moist: Sample No.2 Brown Silty Sandy GRAVEL	DATE 04 12 14 CLIENT Souder, Miller & Asso. PROJECT TAOS LANDFILL Taos County, NM
SAMPLE LOCATION:	By Client E of N 1/2 of Cells 1a&1b	PERMIT CONTRACT Area 2 JOB Final Cover FILE 1464003
CLASSIFICATION	USCS	
% MOISTURE:	4.5%	
% PASSING # 200:	14.9%	

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf							

TOTAL	30.84	Kg	FINE		Moisture
Coarse	10.52	Kg	WET WGT.	521.2	192.45
Fine excess	19.64	Kg	DRY WGT.	498.7	184.13
				BEFORE WASH	
C+Fe+F	30.84	Kg	DRY WGT.	387.3	4.5%
				AFTER WASH	

	SIEVE SIZE	3" 75 mm	1 1/2" 38 mm	3/4" 19 mm	1/2" 12.5 mm	3/8" 9.5 mm
Kg	Cum Wgt	0.00	2.59	6.76	9.08	10.52
	Retained	0%	8%	21.9%	29.4%	34.1%
	Passing	100%	92%	78%	71%	66%
	Specified					

	SIEVE SIZE	No. 4 4.75 mm	No. 10 2.00 mm	No. 40 0.425 mm	No. 200 .075 mm	Pan
g	Cum Wgt	62.7	142.8	303.3	386.0	387.2
	Retained	42.4%	53.0%	74.2%	85.1%	-0.1
	Passing	58%	47%	26%	14.9%	grams
	Specified					



POB 1015
BERNALILLO NM 87004

Laboratory & Field Testing Services

505-867-6585

ACNM-NMSHTD & NICET Certified

DATE 04 12 14
CLIENT Souder, Miller & Asso.
PROJECT TAOS LANDFILL
Taos County, NM

PERMIT
CONTRACT Area 2
JOB Final Cover
FILE 1464004

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill
Client Sampled: Area 2
Sample No. 2

Moist:
Brown Silty, Sandy GRAVEL
E of N 1/2 of Cells 1a & 1b

CLASSIFICATION USCS
Tested at: 112.9 lbs/ft³

% Passing # 200 Sieve	14.9%
% Retained on 3/4" Sieve	21.9%
Maximum Dry Density	lbs/ft ³
Optimum Moisture	of Dry Weight
% Compaction of Maximum Density	, Hydrated w/ deAired, distilled
COEFFICIENT OF PERMEABILITY, cm/sec: K	5.62 X 10 ⁻⁴
Corrected Coefficient PERMEABILITY, cm/sec: K	4.77 X 10 ⁻⁴

**PARTICLE SIZE DETERMINATION
ASTM C 117 / 136**

VISUAL DESCRIPTION:	Moist: Sample No.3	DATE 04 12 14
	Brown Silty SAND,	CLIENT Souder, Miller & Asso.
	Trace Gravel	PROJECT TAOS LANDFILL
SAMPLE LOCATION:	By Client	Taos County, NM
	E of S 1/2 of Cells 1a & 1b	PERMIT
CLASSIFICATION	USCS	CONTRACT Area 3
% MOISTURE:	7.7%	JOB Final Cover
% PASSING # 200:	23.3%	FILE 1464005

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf							

TOTAL	22.13	Kg	FINE		Moisture
Coarse	0.77	Kg	WET WGT.	571.8	221.53
Fine excess	20.62	Kg	DRY WGT.	531.1	205.75
				BEFORE WASH	
C+Fe+F	22.13	Kg	DRY WGT.	404.4	7.7%
				AFTER WASH	

		SIEVE SIZE	3" 75 mm	1 1/2" 38 mm	3/4" 19 mm	1/2" 12.5 mm	3/8" 9.5 mm
Kg	Cum Wgt		0.00	0.00	0.00	0.38	0.77
	Retained		0%	0%	0.0%	1.7%	3.5%
	Passing		100%	100%	100%	98%	97%
	Specified						
		SIEVE SIZE	No. 4 4.75 mm	No. 10 2.00 mm	No. 40 0.425 mm	No. 200 .075 mm	Pan
g	Cum Wgt		43.2	118.6	276.1	402.7	404.2
	Retained		11.3%	25.0%	53.7%	76.7%	-0.2 grams
	Passing		89%	75%	46%	23.3%	
	Specified						



DATE 04 12 14
 CLIENT Souder, Miller & Asso.
 PROJECT TAOS LANDFILL
 Taos County, NM

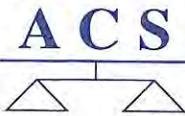
P. Fant, PE
 SOUDER, MILLER & ASSOCIATES
 2904 Rodeo Park Drive East
 Santa Fe, New Mexico 87505

PERMIT
 CONTRACT Area 3
 JOB Final Cover
 FILE 1464006

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
 (Falling Head)

Specimen ID Taos Landfill	Moist:
Client Sampled: Area 3	Brown Silty SAND, Trace Gravvel
Sample No. 3	E of S 1/2 of Cells 1a & 1b
CLASSIFICATION	USCS
Tested at: 90.5	lbs/ft ³
% Passing # 200 Sieve	23.3%
% Retained on 3/4" Sieve	0.0%
Maximum Dry Density	lbs/ft ³
Optimum Moisture	of Dry Weight
% Compaction of Maximum Density	, Hydrated w/ deAired, distilled
COEFFICIENT OF PERMEABILITY, cm/sec: K	8.71 X 10 ⁻⁴
Corrected Coefficient PERMEABILITY, cm/sec: K	7.44 X 10 ⁻⁴



PARTICLE SIZE DETERMINATION
ASTM C 117 / 136

VISUAL DESCRIPTION:	Moist: Sample No.4 Brown Silty SAND, With Gravel	DATE 04 12 14 CLIENT Souder, Miller & Asso PROJECT TAOS LANDFILL Taos County, NM
SAMPLE LOCATION:	By Client N 1/2 of Cell 3b	PERMIT CONTRACT Cell 3b JOB Final Cover FILE 1464007
CLASSIFICATION	USCS	
% MOISTURE:	12.4%	
% PASSING # 200:	19.4%	

SOURCE Taos Lf	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
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TOTAL	24.78	Kg		FINE Grams			
Coarse	6.10	Kg	WET WGT.	530.0			Moisture 200.78
Fine excess	18.03	Kg	DRY WGT.	471.7	BEFORE WASH		178.68
C+Fe+F	24.78	Kg	DRY WGT.	355.6	AFTER WASH		12.4%

	SIEVE SIZE	3" 75 mm	1 1/2" 38 mm	3/4" 19 mm	1/2" 12.5 mm	3/8" 9.5 mm	
Kg	Cum Wgt	0.00	0.65	3.07	4.82	6.10	
	Retained	0%	3%	12.4%	19.5%	24.6%	
	Passing	100%	97%	88%	81%	75%	
	Specified						

	SIEVE SIZE	No. 4 4.75 mm	No. 10 2.00 mm	No. 40 0.425 mm	No. 200 .075 mm	Pan	
g	Cum Wgt	36.7	97.4	204.6	350.2	355.5	
	Retained	30.5%	40.2%	57.3%	80.6%	-0.1	grams
	Passing	70%	60%	43%	19.4%		
	Specified						



SUMMARY OF OPTIMUM MOISTURE / MAXIMUM DENSITY DETERMINATION

VISUAL DESCRIPTION: Brown Silty SAND
With Gravel

DATE 04 21 14

CLIENT Souder, Miller & Asso

Client Sampled: #4

PROJECT TAOS LANDFILL

SAMPLE LOCATION: Taos Lf

Taos, N M

PERMIT

USCS CLASSIFICATION:

CONTRACT Cell 3b

Moisture % of Dry Wgt. 12.4%

JOB Final Cover

% PASSING # 200: 19.4%

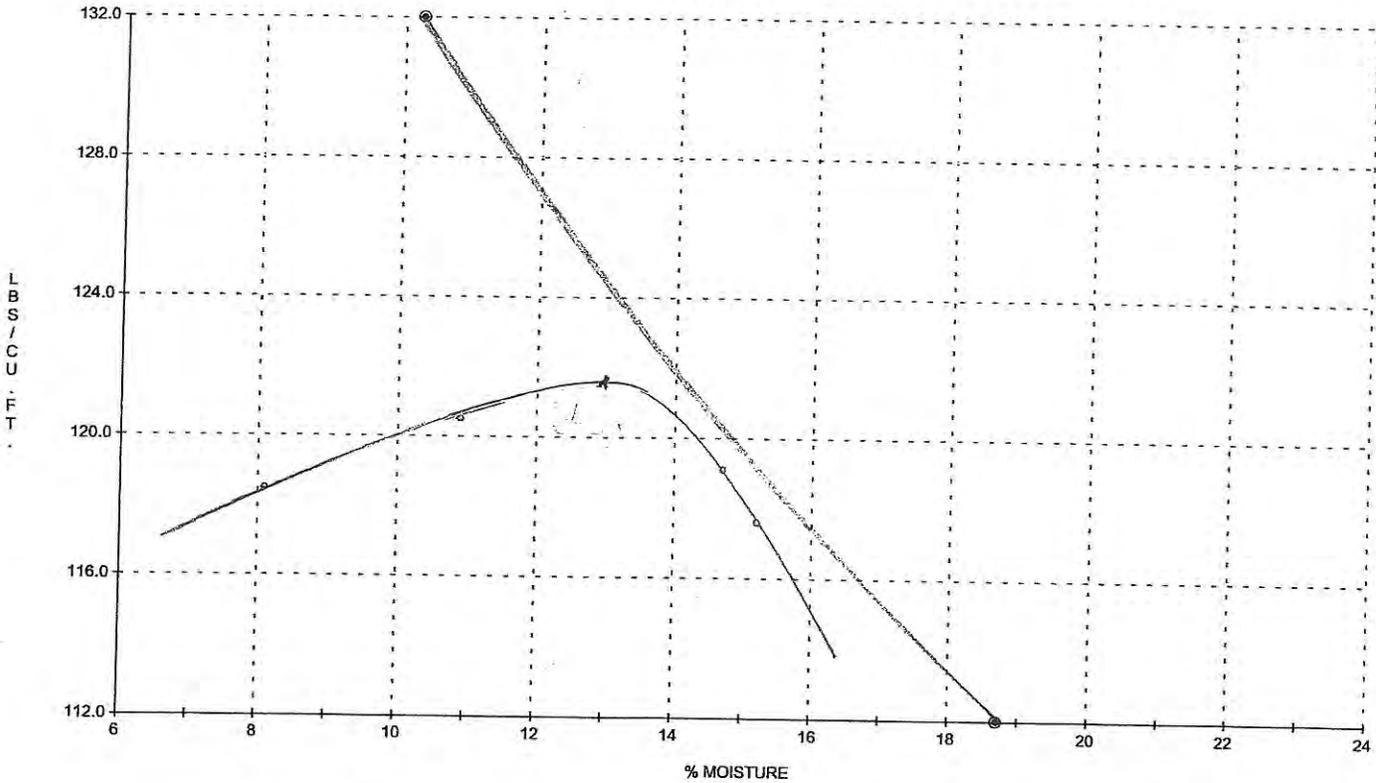
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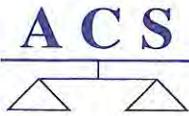
MAXIMUM DENSITY 121.6 Lbs/CuFt ³	OPTIMUM MOISTURE 13.1% of Dry Wgt.	DESIGNATION ASTM D 698	METHOD B
--	---------------------------------------	---------------------------	-------------

	SPECIFIC VALUES		CHARTED VALUES				
	G = 2.70						
MOISTURE % DRY WGT	18.70	10.26	8.1	10.9	13.0	14.7	15.2
DRY DENSITY LBS/CU.FT.	112.0	132.0	118.5	120.5	121.6	119.1	117.6

COMPACTION CURVE PLOTTING

& Zero Air Voids Curve





DATE 4 21 14
CLIENT Souder, Miller & Asso
PROJECT TAOS LANDFILL
Taos County, NM
PERMIT
CONTRACT Cell 3b
JOB Final Cover
FILE 1464009

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill	Moist:
Client Sampled: Cell 3b	Brown Silty SAND, With Gravel
Sample No. 4	N 1/2 of Cell 3b
CLASSIFICATION	USCS
Tested at: 110.0	lbs/ft ³
% Passing # 200 Sieve	19.4%
% Retained on 3/4" Sieve	12.4%
Maximum Dry Density	121.6 lbs/ft ³
Optimum Moisture	13.1% of Dry Weight
% Compaction of Maximum Density	90.5%, Hydrated w/ deAired, distilled
COEFFICIENT OF PERMEABILITY, cm/sec: K	2.68×10^{-4}
Corrected Coefficient PERMEABILITY, cm/sec: K	2.48×10^{-4}

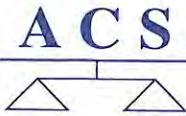
PARTICLE SIZE DETERMINATION ASTM C 117 / 136

VISUAL DESCRIPTION:	Moist: Sample No.5 Brown Silty Sandy GRAVEL	DATE 04 12 14 CLIENT Souder, Miller & Asso PROJECT TAOS LANDFILL Taos County, NM
SAMPLE LOCATION:	By Client S 1/2 of Cell 3b	PERMIT CONTRACT Cell 3b JOB Final Cover FILE 1464010
CLASSIFICATION	USCS	
% MOISTURE:	7.8%	
% PASSING # 200:	12.1%	

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf							

TOTAL	26.25	Kg					
			FINE				
			Grams				Moisture
Coarse	9.95	Kg	WET WGT.	513.0			225.96
Fine excess	15.61	Kg	DRY WGT.	476.1	BEFORE WASH		209.70
C+Fe+F	26.25	Kg	DRY WGT.	383.4	AFTER WASH		7.8%

	SIEVE SIZE	3" 75 mm	1 1/2" 38 mm	3/4" 19 mm	1/2" 12.5 mm	3/8" 9.5 mm	
Kg	Cum Wgt	0.00	2.94	6.56	8.62	9.95	
	Retained	0%	11%	25.0%	32.8%	37.9%	
	Passing	100%	89%	75%	67%	62%	
	Specified						
	SIEVE SIZE	No. 4 4.75 mm	No. 10 2.00 mm	No. 40 0.425 mm	No. 200 .075 mm	Pan	
g	Cum Wgt	66.9	143.5	305.8	383.0	383.4	
	Retained	46.6%	56.6%	77.8%	87.9%	0.0	grams
	Passing	53%	43%	22%	12.1%		
	Specified						



SUMMARY OF OPTIMUM MOISTURE / MAXIMUM DENSITY DETERMINATION

VISUAL DESCRIPTION: Brown Silty, Sandy GRAVEL

DATE 04 21 14

Client Sampled: #5

CLIENT Souder, Miller & Asso

SAMPLE LOCATION: Taos Lf

PROJECT TAOS LANDFILL

Taos, N M

USCS CLASSIFICATION:

PERMIT

Moisture % of Dry Wgt. 7.8%

CONTRACT Cell 3b

% PASSING # 200: 12.1%

JOB Final Cover

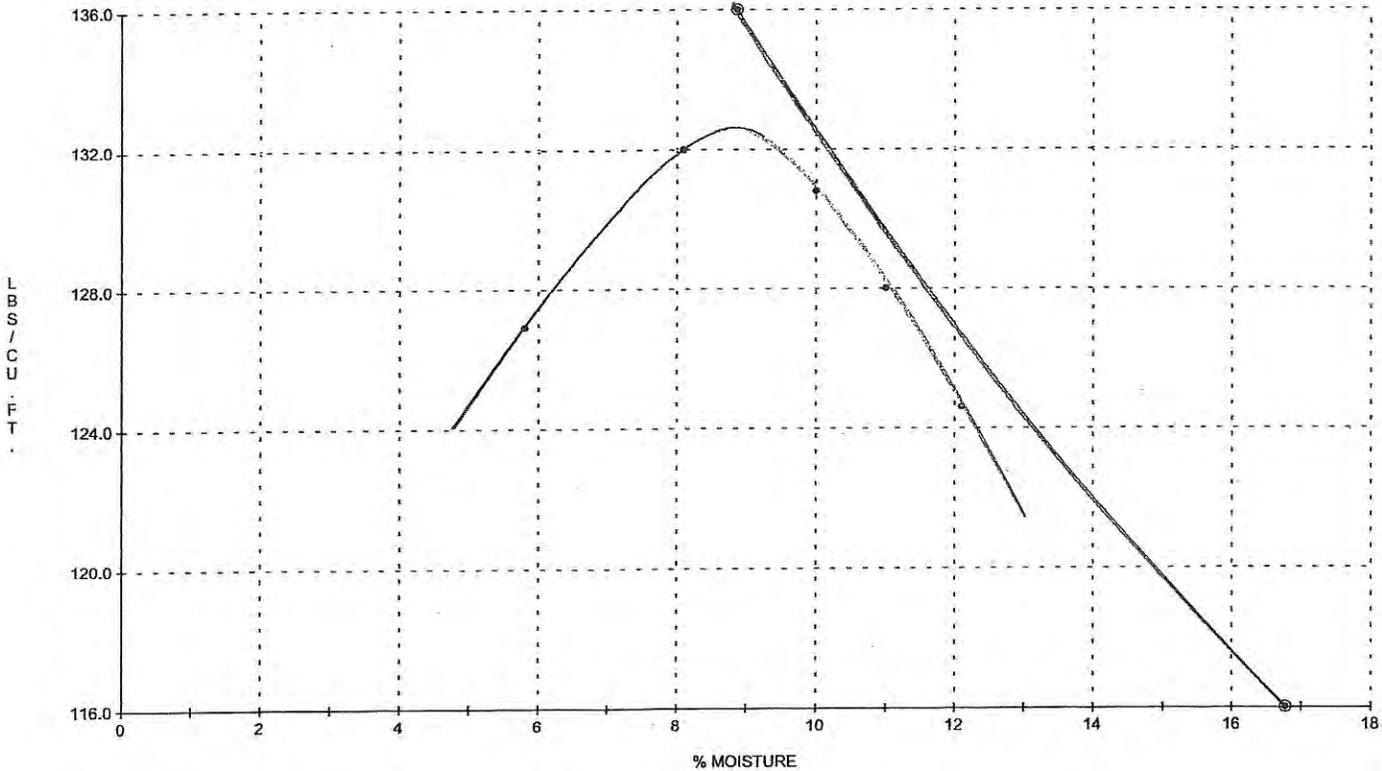
FILE 1464011

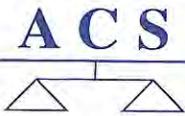
MAXIMUM DENSITY	OPTIMUM MOISTURE	DESIGNATION	METHOD
132.6 Lbs/CuFt ³	8.8% of Dry Wgt.	ASTM D 698	C

MOISTURE % DRY WGT	SPECIFIC VALUES G = 2.70		CHARTED VALUES				
	16.78	8.87	5.8	8.1	10.0	11.0	12.1
DRY DENSITY LBS/CU.FT.	116.0	136.0	126.9	132.0	130.8	128.0	124.6

COMPACTION CURVE PLOTTING

& Zero Air Voids Curve





DATE 4 21 14
CLIENT Souder, Miller & Asso
PROJECT TAOS LANDFILL
Taos County, NM

PERMIT
CONTRACT Cell 3b
JOB Final Cover
FILE 1464012

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill	Moist:
Client Sampled: Cell 3b	Brown Silty SAND, With Gravel
Sample No. 5	S 1/2 of Cell 3b
CLASSIFICATION	USCS
Tested at: 119.7	lbs/ft ³
% Passing # 200 Sieve	12.1%
% Retained on 3/4" Sieve	25.0%
Maximum Dry Density	132.6 lbs/ft ³
Optimum Moisture	8.8% of Dry Weight
% Compaction of Maximum Density	90.3%, Hydrated w/ deAired, distilled
COEFFICIENT OF PERMEABILITY, cm/sec: K	1.79 X 10 ⁻⁴
Corrected Coefficient PERMEABILITY, cm/sec: K	1.65 X 10 ⁻⁴

20°

**PARTICLE SIZE DETERMINATION
ASTM C 117 / 136**

VISUAL DESCRIPTION:	Moist: Sample No. 6	DATE 04 12 14
	Brown Sandy GRAVEL, With Silt	CLIENT Souder, Miller & Asso
SAMPLE LOCATION:	By Client	PROJECT TAOS LANDFILL
	N 1/2 of Cell 4a	Taos County, NM
CLASSIFICATION	USCS	PERMIT
% MOISTURE:	8.1%	CONTRACT Cell 4a
% PASSING # 200:	11.9%	JOB Final Cover
		FILE 1464013

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf							

TOTAL	24.64	Kg	FINE		Moisture
Coarse	11.28	Kg	WET WGT.	601.5	244.88
Fine excess	12.62	Kg	DRY WGT.	556.5	226.58
				BEFORE WASH	
C+Fe+F	24.68	Kg	DRY WGT.	435.8	8.1%
				AFTER WASH	

Kg	SIEVE SIZE	3"	1 1/2"	3/4"	1/2"	3/8"
		75 mm	38 mm	19 mm	12.5 mm	9.5 mm
	Cum Wgt	0.00	2.10	6.97	9.64	11.28
	Retained	0%	9%	28.2%	39.1%	45.7%
	Passing	100%	91%	72%	61%	54%
	Specified					

g	SIEVE SIZE	No. 4	No. 10	No. 40	No. 200	Pan
		4.75 mm	2.00 mm	0.425 mm	.075 mm	
	Cum Wgt	75.5	165.4	344.2	434.8	435.7
	Retained	53.1%	61.8%	79.3%	88.1%	-0.1
	Passing	47%	38%	21%	11.9%	grams
	Specified					



DATE 4 15 14
CLIENT Souder, Miller & Asso
PROJECT TAOS LANDFILL
Taos County, NM
PERMIT
CONTRACT Cell 4a
JOB Final Cover
FILE 1464014

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill

Client Sampled: Cell 4a

Sample No. 6

Moist:

Brown Sandy GRAVEL, with Silt

N 1/2 of Cell 4a

CLASSIFICATION

USCS

Tested at: 106.6 lbs/ft³

% Passing # 200 Sieve 11.9%

% Retained on 3/4" Sieve 28.2%

Maximum Dry Density lbs/ft³

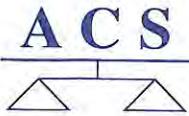
Optimum Moisture of Dry Weight

% Compaction of Maximum Density , Hydrated w/ deAired, distilled

COEFFICIENT OF PERMEABILITY, cm/sec: K 2.11 X 10⁻³

Corrected Coefficient PERMEABILITY, cm/sec: K 1.84 X 10⁻³

20°



**PARTICLE SIZE DETERMINATION
ASTM C 117 / 136**

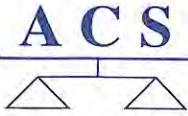
VISUAL DESCRIPTION:	Moist: Sample No.7	DATE 04 12 14
	Brown Silty, Gravelly SAND	CLIENT Souder, Miller & Asso
SAMPLE LOCATION:	By Client	PROJECT TAOS LANDFILL
	S 1/2 of Cell 4a	Taos County, NM
CLASSIFICATION	USCS	PERMIT
% MOISTURE:	9.5%	CONTRACT Cell 4a
% PASSING # 200:	17.6%	JOB Final Cover
		FILE 1464015

SOURCE	2 FF	LL/PI	UNIT WGT	SOUNDNESS	ABRASION	DESIGN	NOTE
Taos Lf							

TOTAL	21.14	Kg	FINE		Moisture
Coarse	4.28	Kg	WET WGT.	599.6	186.91
Fine excess	16.14	Kg	DRY WGT.	547.6	170.71
				BEFORE WASH	
C+Fe+F	21.14	Kg	DRY WGT.	428.6	9.5%
				AFTER WASH	

SIEVE SIZE	3"	1 1/2"	3/4"	1/2"	3/8"	
	75 mm	38 mm	19 mm	12.5 mm	9.5 mm	
Kg	Cum Wgt	0.00	0.86	2.26	3.40	4.28
	Retained	0%	4%	10.7%	16.1%	20.2%
	Passing	100%	96%	89%	84%	80%
	Specified					

SIEVE SIZE	No. 4	No. 10	No. 40	No. 200	Pan	
	4.75 mm	2.00 mm	0.425 mm	.075 mm		
g	Cum Wgt	54.0	123.1	307.4	426.8	428.6
	Retained	28.1%	38.2%	65.0%	82.4%	0.0
	Passing	72%	62%	35%	17.6%	
	Specified					grams



DATE 04 15 14
CLIENT Souder, Miller & Asso
PROJECT TAOS LANDFILL
Taos County, NM

PERMIT
CONTRACT Cell 4a
JOB Final Cover
FILE 1464016

P. Fant, PE
SOUDER, MILLER & ASSOCIATES
2904 Rodeo Park Drive East
Santa Fe, New Mexico 87505

ATTENTION: Ewan Young, PM

PERMEABILITY OF GRANULAR SOILS
(Falling Head)

Specimen ID Taos Landfill

Client Sampled: Cell 4a

Sample No. 7

Moist:

Brown Silty, Gravelly SAND

S 1/2 of Cell 4a

CLASSIFICATION

USCS

Tested at:

93.9 lbs/ft³

% Passing # 200 Sieve

17.6%

% Retained on 3/4" Sieve

10.7%

Maximum Dry Density

lbs/ft³

Optimum Moisture

of Dry Weight

% Compaction of Maximum Density

, Hydrated w/ deAired, distilled

COEFFICIENT OF PERMEABILITY, cm/sec: K

1.79 X 10⁻³

Corrected Coefficient PERMEABILITY, cm/sec: K

1.62 X 10⁻³



Rev #	Date	Description	By	CHKD

SMA
 SOUDER, MILLER & ASSOCIATES
 2904 Rodeo Park Drive, Bldg 100
 Santa Fe, NM 87505
 Phone (505) 471-9211 Toll-Free (800) 466-5566 Fax (505) 471-9675
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TAOS COUNTY, NM
 TAOS REGIONAL LANDFILL BOARD
**TAOS REGIONAL LANDFILL
 CELL 3B & 4 CONSTRUCTION PLANS
 EXISTING CONDITIONS 2013**

THIS DRAWING IS INCOMPLETE
 AND NOT TO BE USED FOR
 CONSTRUCTION UNLESS IT IS
 STAMPED, SIGNED AND DATED

Designed ECY	Drawn BE	Checked PGF
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Date: MARCH 2014
 Scale: Horiz: N/A
 Vert: N/A
 Project No: 4222345
 Sheet: 6

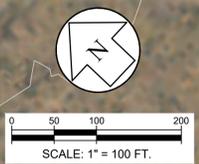


EXHIBIT B

**Construction Quality Assurance/
Quality Control Plan
Taos Regional Landfill
May 2022**

**TAOS REGIONAL LANDFILL
TAOS, NEW MEXICO**

**CONSTRUCTION QUALITY ASSURANCE /
QUALITY CONTROL PLAN**



PREPARED FOR:
THE TOWN OF TAOS
AS THE FISCAL AGENT FOR THE TAOS REGIONAL LANDFILL

FOR SUBMITTAL TO:
NEW MEXICO ENVIRONMENT DEPARTMENT - SOLID WASTE BUREAU
P.O. BOX 5469
SANTA FE, NEW MEXICO 87502-5469

PREPARED BY:
SOUDER, MILLER & ASSOCIATES
May 26, 2022



Souder, Miller & Associates
Engineering ♦ Environmental ♦ Geomatics

2904 Rodeo Park Drive East, Building 100 ♦ Santa Fe, NM 87505
505.473.9211 ♦ 800.460.5366 ♦ fax 505.471.6975 ♦ www.soudermiller.com

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APPENDIX A: MATERIAL PROPERTIES

APPENDIX B: CQA FORMS

SECTION 1.0 INTRODUCTION

This Construction Quality Assurance/ Quality Control Plan (CQAQCP), in accordance with New Mexico Environment Department (NMED) Testing and Quality Control for Liners and Final Covers, is provided to supplement the project specifications. New Mexico Administrative Code (NMAC) 20.9.4.14, requires that a site-specific CQAQCP be submitted and approved by the NMED prior to commencement of any construction activities. Adherence to the procedures and policies of this CQAQCP will ensure that the completed work will have been constructed to meet or exceed all design criteria plans and specifications. Additionally, as per 20.9.3.21.A NMAC, at least 14 days prior to the start of solid waste facility construction, the owner or operator shall provide the NMED with a major milestone schedule for construction activities.

1.1 Document Purpose

This CQAQCP is for construction activities at the Taos Regional Landfill as contracted by the Town of Taos as fiscal agent. The Plan objective is to ensure that construction requirements are properly implemented and that the design and performance standards are achieved. The components of the construction that will require some form of inspection or testing as described by the CQAQCP are as follows:

- Base Grading
- High Density Polyethylene (HDPE) liner and Geosynthetic Clay Liner (GCL) Construction
- Geotextile
- Granular Fill Materials
- Top of Waste Grading
- Soil Infiltration Layer
- Topsoil with Native Seeding
- Stormwater Control Structures

This plan includes four elements. These are:

- a. Responsibility and Authority
- b. Personnel Qualifications
- c. Inspection Activities
- d. Documentation

This CQAQCP provides guidance and requirements to determine that:

- a. Critical materials specified in the contract documents are supplied and installed in accordance with the source, design, and performance criteria to meet the overall intent of the construction.
- b. CQAQCP reports, samples, and test results are substantiated and maintained as proof to the quality of construction in accordance with the approved design criteria for each site.

- c. Each party involved has a clear understanding of what is required for each component of the construction therefore decreasing the possibility for confusion over the minimum acceptable requirements during construction.

1.2 Document Users

Use of this document will be required of the following companies and agencies participating in the construction.

- New Mexico Environment Department Solid Waste Bureau (Permitting Agency)
- Town of Taos as fiscal agent for the Taos Regional Landfill Board
- Consulting Engineer
- General Contractor & Subcontractors
- Construction Quality Assurance Personnel
- Approved Testing Laboratories

Any other subcontractor, subconsultant, or laboratory that eventually becomes a participant in the project will also be required to implement the provisions of this document.

1.3 Concepts of Construction Quality Control/Assurance

The management of construction quality is the responsibility of the Consulting Engineer. This function involves the use of appropriate scientific and engineering principles and practices to confirm that the specific landfill components have been constructed to meet or exceed the intent of the design criteria, plans, and specifications. To accomplish this, construction quality control activities will be performed by the Supervising Contractor and provided to the CQA Certifying Engineer for approval and incorporation into a final construction completion report. Construction quality control is a planned system of inspections that is used to directly monitor and control the quality of the construction process. The construction quality assurance will be performed by the Construction Quality Assurance Personnel. Therefore, the quality assurance will be performed independently of the parties engaged in direct construction activities. Quality assurance will include the inspections, verifications, audits, and evaluations of materials and workmanship detailed in this plan, necessary to determine and document the quality of construction for the facility.

1.4 Scope of Quality Control and Quality Assurance

The scope of this CQAQCP includes full-time quality assurance of the construction activities.

This CQAQCP does not address design guidelines, installation specifications, or selection of materials. These items are addressed in the overall design documents.

1.5 References

The CQAQCP includes references to test procedures of the American Society for Testing and Materials (ASTM). Recognizing the changing nature of the above standards, this CQAQCP is subject to periodic revision until its full implementation.

SECTION 2.0 CQAQCP MANAGEMENT

The parties discussed in this section are associated with the design, transportation, execution, and quality assurance of the construction activities at the Taos Regional Landfill. The definitions, qualifications, and responsibilities of these parties are outlined in the following subsections.

All CQA personnel will be employed by an organization that operates independently of the Supervising Authority/Contract Owner and General Contractor. However, the Town of Taos as fiscal agent may be involved in CQA activities under the direct supervision of the CQA Certifying Engineer and/or CQA Manager.

2.1 Permitting Agency

The Permitting Agency, NMED, has the responsibility to review the CQAQCP for compliance with the Department's regulations and to decide to approve or deny the Plan. The NMED will have the responsibility and authority to review and accept or reject any design revisions or requests for variance that are submitted by the facility applicant after the CQAQCP is approved. The Permitting Agency also has the responsibility and authority to enforce compliance with the permit requirements during the construction process and may review all CQA documentation during or after facility construction to confirm that the approved CQAQCP was followed, and that the facility was constructed as specified in the design. Finally, the NMED will review the certification report and decide as to whether the base grading, HDPE and GCL construction, geotextile, and granular fill materials were constructed in accordance with the CQAQCP.

2.2 Supervising Authority/Contract Owner

The Supervising Authority/Contract Owner for the design, and construction of the landfill facility is the Town of Taos (TT). This responsibility includes complying with the requirements of the permitting agency, NMED, and reviewing the submitted CQA documentation to ensure that the landfill improvements were constructed as specified in the design. TT has the authority to select and dismiss organizations charged with design, CQA, and construction activities. TT also has the authority to accept or reject design plans and specifications, CQAQCP, reports and recommendations of the CQA Manager/Resident Project Representative (RPR), and the materials and workmanship of the General Contractor (when not acting as the General Contractor).

2.3 Construction Quality Assurance Personnel

2.3.1 CQA Certifying Engineer

2.3.1.1 Responsibilities

The CQA Certifying Engineer is responsible for all CQA activities being performed during construction. The CQA Certifying Engineer may have also performed the engineering design and preparing the associated drawings and specifications for the construction activities, however, this role may be performed by others. The CQA Certifying Engineer is responsible for approving

all design and specification changes and making design clarifications necessitated during the construction activities. The CQA Certifying Engineer is responsible for reviewing and approving shop drawings submitted by the General Contractor, as required by the contract documents. The CQA Certification Engineer is also responsible for submitting the final record drawings and certification report to the Supervising Authority/Contract Owner and the NMED. The CQA Certifying Engineer will be employed by an organization that operates independently of the Supervising Authority/Contract Owner and General Contractor. CQA Certifying Engineer is responsible for checking of field and laboratory methods and results for accuracy, maintaining test data for future reporting, acceptance and approval of materials and workmanship, education of inspection personnel in CQA requirements and procedures, and assuring that the project is constructed according to the NMED approved plans and specifications.

2.3.1.2 Qualifications

The CQA Certifying Engineer shall be licensed by the New Mexico State Board of Licensure for Professional Engineers and Surveyors. The CQA Certifying Engineer shall be familiar with all applicable regulatory requirements.

2.3.2 CQA Manager/Resident Project Representative (RPR)

2.3.2.1 Responsibilities

The CQA Manager/RPR is responsible for observing and documenting activities related to the construction on behalf of the Supervising Authority/Contract Owner. In the scope of this document, the term CQA Manager/RPR applies to a qualified individual(s) assigned by the CQA Certifying Engineer to oversee construction activities.

The specific duties of the CQA Manager/RPR personnel are as follows:

- a. Develop a site-specific addendum for the quality assurance plan (if necessary) with the assistance of the CQA Certifying Engineer.
- b. Review all Manufacturer and Installer certifications and documentation and make appropriate recommendations, as required by the contract documents.
- c. Review Installer personnel qualifications for conformance with those qualifications pre-approved for work onsite.
- d. Review design criteria, plans and specifications for clarity and completeness, so that the CQAQCP can be implemented.
- e. Prepare a summary of the quantities of materials installed and tested.
- f. Prepare summaries of the cover-system quality assurance activities.
- g. Oversee the marking, packaging, and shipping of all laboratory test samples.
- h. Review the result of laboratory testing and makes appropriate recommendations to CQA Certifying Engineer.
- i. Report any unapproved deviations from the CQAQCP to the CQA Certifying Engineer.
- j. Prepare the final certification report.

- k. Monitor the following operations for all cover system material:
 - i. Material delivery
 - ii. Unloading and onsite transport and storage
 - iii. Sampling for conformance testing
 - iv. Deployment operations and documentation
 - v. Visual inspection by walkover
 - vi. Repair operations
- l. Document any onsite activities that could result in damage to the cover system. Any problems noted shall be reported as soon as possible to the CQA Certifying Engineer.
- m. Identification of work to the CQA Certifying Engineer that the CQA Manager/RPR believes should be accepted, rejected, or uncovered for observation, or that may require special testing, inspection, or approval.
- n. Rejection of defective work and verification that corrective measures are implemented.
- o. Reviewing design criteria, plans, and specifications for clarity and completeness so that the CQAQCP can be implemented.
- p. Educating CQA inspection personnel on CQAQCP requirements and procedures, as necessary.
- q. Scheduling and coordinating CQA inspection activities.
- r. Provide copies of any logs, summary reports, or other documentation requested by the CQA Certifying Engineer.

2.3.2.2 Qualifications

The CQA Manager/RPR should possess formal training, be qualified by experience, and have an in-depth familiarity with the project and knowledge regarding all aspects of landfill construction.

2.3.3 Construction Quality Assurance Monitors

2.3.3.1 Responsibilities

The term “CQA Monitor” applies to any qualified individuals working under the CQA Manager/RPR to implement the CQAQCP, as deemed appropriate based upon the burden of inspection, sampling, and documentation necessary during construction activities. The overall responsibility of CQA Monitors is to perform the activities specified in this plan (e.g., inspection, sampling, documentation). CQA Monitors will observe critical components of the base grading, HDPE liner and GCL construction, geotextile, granular fill materials, final cover, stormwater control system, top of waste grading, soil infiltration layer, topsoil, and seeding.

The specific responsibilities and authority of each of these individuals, as amended by the CQA Manager/RPR, are defined as follows:

- a. Reviews all design drawings and specifications.
- b. Reviews other site-specific documentation, including proposed layouts and manufacturer and Installer literature.

- c. Reviews all changes to design drawings and specifications as issued by the CQA Certifying Engineer.
- d. Acts as an onsite representative of the Supervising Authority/Contract Owner.
- e. Attends all quality assurance related meetings.
- f. Participates in the preparation of the record drawings.
- g. Reviews all reports, logs, and photographs.
- h. Notes any onsite activities that could result in damage to the cover system.
- i. Reports to the CQA Manager/RPR, and logs in any reports and relevant observations.
- j. Prepares his own summary reports.
- k. Oversees the monitoring and documentation (including photographic) of all installation operations. Photographs shall be taken routinely and in critical areas of the installation sequence. Operations related to geomembrane and GCL activities to be monitored include:
 - i. Subgrade preparation
 - ii. Weather conditions
 - iii. Conformance testing
 - iv. Material delivery
 - v. Unloading and on-site transport and storage
 - vi. Sampling for conformance testing
 - vii. Deployment operations
 - viii. Joining and/or seaming operations (geomembrane and GCL)
 - ix. Condition of panels placed
 - x. Repair operations
 - xi. Trial seams
 - xii. Seam preparation
 - xiii. Seaming
 - xiv. Nondestructive seam testing
 - xv. Sampling for destructive seam testing
 - xvi. Appropriate logging of seaming and patching testing
 - xvii. Field tensiometer testing
 - xviii. Laboratory sample marking
- l. Prepares daily summaries of quantities of material installed each day
- m. Prepares a weekly summary of the liner and/or cover system quality assurance activities

2.3.3.2 Qualifications

CQA Monitors shall be familiar with all aspects of landfill construction and have sufficient practical, technical, and administrative experience to execute and record inspection activities.

2.4 General Contractor

2.4.1 General Contractor

2.4.1.1 Responsibilities

The General Contractor is the principal contractor retained by TT to perform the construction activities unless TT self-performs the construction. In this event, TT will take on the responsibilities of the General Contractor during CQA activities. The General Contractor is responsible for scheduling and coordination of the required work with subcontractors (as necessary) to complete the project. The General Contractor shall provide a representative at all times during any construction activity onsite. The General Contractor is responsible for furnishing as-built drawings and a copy of complete documentation for the construction. The General Contractor is also responsible for updating all design drawings onsite daily for all deviations from the contract drawings. All deviations must be initialed and approved by the responsible CQA Manager/RPR onsite.

2.4.1.2 Qualifications

The General Contractor shall be qualified to perform all aspects of work required to successfully construct the project. The General Contractor shall be licensed in the State of New Mexico and shall demonstrate prior related experience. If TT self-performs the construction, it shall be exempt from these qualifications.

2.4.2 Contractor's Representative

2.4.2.1 Responsibilities

The Contractor's Representative is responsible for coordinating and supervising his crew and subcontractors' work onsite. In the event that TT self-performs the construction efforts, TT will take on the responsibilities of the Contractor's Representative. The Contractor's Representative is responsible for making sure that the construction activities are conducted in accordance with the plans and specifications. The Contractor's Representative is responsible for properly labeling, packaging and shipping all of the laboratory test samples. The Contractor's Representative is responsible for pointing out to the CQA Manager/RPR any discrepancies between the plans and specifications and the field conditions. The Contractor's Representative is responsible for attending all meetings held related to the project. The Contractor's Representative is responsible for keeping a log of all construction activities onsite. The Contractor's Representative is responsible for proposing alternative methods, where necessary, to the CQA Manager/RPR for approval and signature as required per the specifications.

2.4.2.2 Qualifications

The Contractor's Representative shall be a qualified individual who is able to perform all the tasks associated with the construction activities. The Contractor's Representative shall demonstrate prior and similar experience to the CQA Manager/RPR. The Contractor's Representative shall have the authority to direct and instruct his crew and his subcontractors (as necessary).

2.5 Subcontractor

2.5.1 Field Liner Installation Manager

2.5.1.1 Responsibilities

The Field Liner Installation Manager is the individual provided and assigned by the Installer (Contractor) to be his field representative, and to provide supervision and guidance to the installation crew. The Field Liner Installation Manager is responsible for providing guidance and supervision to the installation crew to ensure that the geosynthetic products are installed in accordance with the manufacturer guidelines and the project plans and specifications. The Field Liner Installation Manager is responsible for conducting all the required field testing and coordinating and reporting all conflicts to the Contractor's Representative and the CQA Monitor. The Field Liner Installation Manager is responsible for keeping a daily log of all activities related to geosynthetic products installed and attending all related project meetings.

2.5.1.2 Qualifications

The Field Liner Installation Manager must be qualified based on previously demonstrated experience, management ability, and authority. The Field Liner Installation Manager shall have previously managed the installation of at least a total of 2,000,000 square feet of geosynthetic products using the same type of seaming apparatus to be used at the site.

2.5.2 Liner Installer

2.5.2.1 Responsibilities

The Liner Installer is the firm responsible for installation of the geosynthetic products. In the context of this plan, the Liner Installer is the Manufacturer, or an approved Installer trained and certified to install the Manufacturer's GCL and geomembrane. The Liner Installer shall be responsible for field handling, storing, deploying, seaming, temporary restraining, and all other aspects of the geosynthetics installation. The Liner Installer shall be responsible for submittal of the documentation listed in Section 2.5.2.3 of this CQAQCP.

2.5.2.2 Qualifications

The Liner Installer shall be certified to install the manufacturer's GCL and geomembrane material. The Liner Installer shall be pre-qualified and approved by the Owner's Representative. The Liner Installer shall be able to provide qualified personnel to meet the demands of the project. The Liner Installer may be required to provide a Field Liner Installation Manager.

2.5.2.3 Submittal

2.5.2.3.1. Pre-Qualification

To be considered for pre-qualification, the Liner Installer shall submit the following information:

- a. Corporate background and information
- b. Description of installation capabilities:
 - i. Information on equipment (numbers and types), personnel (number of site managers, number of crews).
 - ii. Average daily production anticipated.



- iii. A minimum of three samples of field geomembrane seams and a list of minimum values for geomembrane seam properties.
- c. A list of at least five completed facilities, totaling a minimum of 2,000,000 square feet for which the Liner Installer has installed geosynthetics. For each installation, the following information shall be provided:
 - i. Name and purpose of facility, location, and date of installation.
 - ii. Name of owner, design engineer, manufacturer, and contact at the facility who can discuss the project.
 - iii. Type and thickness of product and surface area of the installed product.
 - iv. Type of seaming, patching, and tacking equipment used.
 - v. A copy of the manufacturer's certification or approval letter.
 - vi. Resume of the qualifications of the Field Liner Installation Manager and Master Seamer.
- d. The Liner Installer's quality control manual.
- e. A copy of letters of recommendation supplied by the geomembrane and GCL liner manufacturers.
- f. Five letters of reference from clients/owners who have worked with the proposed superintendent attesting to Liner Installer's quality of work, date performed, adherence to project schedule, and responsiveness to quality control deficiencies.

2.5.2.3.2. Pre-Installation

Prior to commencement of the installation, the Liner Installer must submit to the CQA Monitor:

- a. Resume of the Field Liner Installation Manager to be assigned to this project, including dates and duration of employment.
- b. Resume of the Master Seamer to be assigned to this project, including dates and duration of employment.
- c. A panel layout drawing showing the installation layout identifying field seams as well as any variance or additional details which deviate from the engineering drawings. The layout shall be adequate for use as a construction plan and shall include dimensions, details, etc.
- d. Installation schedule.
- e. A list of personnel performing field seaming operations along with pertinent experience information.
- f. All geosynthetic quality control certificates as required by this CQAQCP (unless submitted directly to the CQA Monitor by the Manufacturer).
- g. Certificates that extrudate to be used is comprised of the same resin as the geomembrane to be used.
- h. Documentation that bentonite to be used for seaming of the GCL is the same type as the liner and is recommended by the Manufacturer.

- i. Field tensiometer calibration certification performed within 90 days of the start of the geomembrane installation.

The documentation shall be reviewed by the CQA Monitor as outlined in Section 2.6 of this CQAQCP, before installation of the geosynthetic can begin.

2.5.2.3.3. Installation

During the installation, the Liner Installer shall be responsible for the submission of:

- a. Quality control documentation recorded during installation.
- b. Subgrade surface acceptance certificates for each area to be covered by the lining system, signed by the Liner Installer.

2.5.2.3.4. Completion

Upon completion of the installation, the Liner Installer shall submit:

- a. The warranty obtained from the Manufacturer
- b. The installation warranty.

2.5.3 Manufacturer

2.5.3.1 Responsibilities

The Manufacturer is the firm or corporation responsible for production of the geosynthetic material to be used in the project. The Manufacturer is responsible for the condition of the geosynthetic until the material is accepted by the Owner or CQA Monitor upon delivery. The Manufacturer shall produce a consistent product meeting the project specifications and shall provide quality control documentation for the project specified herein.

2.5.3.2 Qualifications

Prior to shipment of any material, each Manufacturer shall be pre-qualified by the CQA Manager/RPR. Each Manufacturer shall provide sufficient production capacity and qualified personnel to meet the demands of the project as identified in the project specifications. Each Manufacturer shall have an internal quality control program for its product that meets the specified requirements. The Manufacturer is the firm or corporation responsible for production of the geosynthetic

2.5.3.3 Pre-Qualification

Each Manufacturer shall meet the following requirements and submit the following information to be considered for pre-qualification:

- a. Corporate background and information
- b. Manufacturing capabilities:
 - i. Information on plant size, equipment, personnel, number of shifts per day, and capacity per shift.
 - ii. A list of material properties and samples of liner with attached certified test results.



- iii. A list of at least 10 completed facilities totaling a minimum of 5,000,000 square feet for which the Manufacturer has manufactured geosynthetic product in the past year. For each facility, the following information shall be provided:
 - iv. Name and purpose of facility, location, and date of installation.
 - v. Name of owner, project manager, design engineer, and installer.
 - vi. Type and thickness of product, and surface area of installed product.
 - vii. Available information on the performance of the lining system and the facility.
- c. The Manufacturer's quality control manual, including a description of the quality control laboratory facilities.
- d. The Manufacturer's Field Installation Quality Control Manual. At a minimum, the manual shall contain procedures and recommendations for the following:
 - i. Geomembrane deployment
 - ii. Field panel placement
 - iii. Geomembrane seaming
 - iv. Seam testing (destructive, non-destructive for field and laboratory)
 - v. Repair of defects
- e. The origin (supplier's name and production plant) and identification (brand name and number) of resin used to manufacture the product.
- f. A fingerprint of the Manufacturer's geosynthetic product (for polyethylene-based geosynthetics) in accordance with fingerprinting protocol listed in Appendix A, Tables A-2, and A-3 of this CQAQCP.
- g. Manufacturer's NSF certification.

2.5.3.4 Pre-Installation

Prior to the installation of any geosynthetic material, each Manufacturer must submit to the CQA Manager/RPR all quality control documentation required by the appropriate section of this CQAQCP. This documentation shall be reviewed and approved by the CQA Manager/RPR before installation can begin.

2.5.4 Master Seamer

2.5.4.1 Responsibilities

The Master Seamer is the individual assigned by the Installer to conduct seaming operations of the geosynthetic products. The Master Seamer is responsible for seaming the geosynthetic products in accordance with the manufacturer guidelines and the project plans and specifications. The Master Seamer is responsible for maintaining a top quality seaming product free from defects and irregularities. The Master Seamer is responsible for reporting seaming problems and defects to the Field Installation Manager.

2.5.4.2 Qualifications

The Master Seamer shall be a qualified individual who has previous experience in seaming the geosynthetic products. The Master Seamer shall demonstrate that he has seamed a minimum of 2,000,000 square feet of the geosynthetic product.

2.6 Quality Assurance Laboratory (QAL)

2.6.1 Responsibilities

The Quality Assurance Laboratory is a firm, independent from the Supervising Authority/Contract Owner and General Contractor, responsible for conducting geotechnical testing on samples required for the project.

The Quality Assurance Laboratory shall be responsible for conducting the appropriate laboratory tests in accordance with this CQAQCP or as directed by the CQA Manager/RPR. The test procedures shall be in accordance with the test methods specified. The Quality Assurance Laboratory shall be responsible for providing tests results as outlined in this CQAQCP.

2.6.2 Qualifications

The Quality Assurance Laboratory/Laboratories shall be an approved certified laboratory having experience in testing soils, and familiarity with ASTM and other applicable test standards.

2.7 Communications Between Parties

To guarantee a high degree of quality during construction and assure a final product that meets all of the project plans and specifications, open channels of communication are essential. This section discusses appropriate lines of communication and describes all necessary meetings.

2.7.1 Lines of Communication

All lines of communication shall go through the CQA Certifying Engineer who, in turn, will direct the necessary course of action.

2.7.2 Pre-Construction Meeting

A pre-construction meeting shall be held before any construction activity begins. The meeting shall be attended by the Supervising Authority/Contract Owner, General Contractor (if contracted), CQA Certifying Engineer, CQA personnel and any appropriate subconsultants, subcontractors, suppliers, and utilities. The following is a list of CQAQCP related items suggested for discussion at the pre-construction meeting.

- a. Familiarizing each organization with the CQAQCP and its role relative to the construction.
- b. Providing each organization with all relevant CQAQCP documents.
- c. Defining the lines of authority and reviewing the responsibilities of each organization.
- d. Discussing the established procedures or protocol for handling construction deficiencies, repairs, and retesting.
- e. Reviewing methods for documenting and reporting field data.
- f. Reviewing methods for distributing and storing documents.
- g. Reviewing work area security and safety protocols.

- h. Discussing procedures for the location and protection of construction materials and for the prevention of damage to the materials from inclement weather or other adverse events.
- i. Conducting a site walk-around to review construction material, inspect borrow source site, and inspection equipment storage locations.
- j. The meeting shall be documented, and minutes will be transmitted to all parties by the CQA Certifying Engineer.

2.7.3 Progress Meetings

Progress meetings between the CQA Certifying Engineer, CQA Manager/RPR, Contractor's Representative, and any other concerned parties (e.g. other subconsultants, subcontractors, and suppliers) shall be held periodically during construction. These meetings shall discuss current progress, planned activities, and schedule for the upcoming weeks, issues requiring resolution and any new business or revisions to the work. The CQA Manager/RPR shall log any problems, decisions, or questions arising at this meeting in his progress report. If any matter remains unresolved at the end of this meeting, the CQA Manager/RPR and/or CQA Certifying Engineer shall be responsible for the resolution of the matter and the communication of the decision to the appropriate parties.



SECTION 3.0 INSPECTION ACTIVITIES

3.1 Scope of Inspection Activities

Throughout implementation of the construction activities there will be numerous inspections and testing requirements for specific work tasks. The inspection and testing requirements will ensure compliance with the design as presented in the construction drawings and specifications, as well as ensure completion of the work tasks to the highest level of quality. Inspections and testing will provide a means of monitoring the quality and progress of work performed.

The components of the construction that will require some form of inspection or testing as described by the CQAQCP are as follows:

- Base Grading
- HDPE liner and GCL Installation
- Geotextile
- Granular Fill Materials
- Top of Waste Grading
- Soil Infiltration Layer
- Topsoil with Native Seeding
- Stormwater Control Structures

The inspections and testing are described in further detail within the sections below.

3.2 Scope of Inspection Activities

Throughout the period of construction, the quality of work completed, and material used for each of the work tasks will be maintained at its highest possible level through regular inspections of the work. The CQA Manager and/or RPR and representatives of the Owner (as required) will complete inspections throughout the construction period.

Overall, inspections to be conducted by the CQA Manager/RPR include the following:

- a. Daily inspections of the work progress
- b. Inspections of material at the time of delivery to the site to check for characteristics rendering the material unsuitable for use
- c. Comparison of the material delivered to design specifications to ensure that the material delivered meets applicable project specifications.

3.2.1 Scope of Inspection Activities

A pre-construction inspection will be performed prior to beginning work on any major task. The pre-construction inspection will include the following:

- a. Review of contract requirements to ensure that all materials and/or equipment have been determined to meet applicable standards and specifications.

- b. Confirmation that provisions have been made to provide required quality control testing.
- c. Examination of the work area to ascertain that all applicable preliminary work tasks have been completed.
- d. Coordination of work activities with corresponding CQAQCP required testing and inspections.

3.2.2 General Inspections

General inspections will be performed periodically as the amount of work completed warrants and at critical junctures. A general inspection will include the following:

- a. Examination of quality of workmanship
- b. Testing of materials for compliance with contract requirements.
- c. Identification of any omissions
- d. Record of general progress of construction activities

3.2.3 Final Inspections

Final inspections will be performed upon completion of each work task to ensure compliance with the Project Plans and Specifications and to ensure that deficiencies identified in the general inspections have been corrected.

The CQA Manager/RPR will perform these inspections and the results of the inspections will be provided in the final construction report. The CQA Certifying Engineer will notify Supervising Authority/Contract Owner and NMED representatives at least three days in advance of any major final inspections. The results of all inspections will be recorded in the CQA Manager/RPR's site logbook.

3.3 Testing

In addition to the CQA inspections, quality control testing of materials will be carried out as required in the CQAQCP and the Project Plans and Specifications. Testing of select materials provides additional assurances that the component has been properly installed and coordinated with the other components of construction.

The testing requirements, applicable test methods, testing frequency, and acceptance criteria for relevant work task materials and components are detailed in the project specifications, and are summarized in Sections 5 and 6 of this CQAQCP.

SECTION 4.0 GEOMEMBRANE MANUFACTURING AND DELIVERY

4.1 Manufacturing

4.1.1 Final Inspections

The raw material shall be first quality resin containing no more than 2% clean recycled polymer by weight, and meeting the following specifications:

For HDPE:

- Resin Density (ASTM D792 Method A or ASTM D1505): ≥ 0.93 g/cc, Melt Flow Index (ASTM D1238 Condition 190/2.16): < 1.0 gm/10 min.
- Quality control testing shall be carried out by the Manufacturer to demonstrate that the product meets this specification.

Prior to liner delivery and installation, the Manufacturer shall provide the CQA Manager/RPF with the following information:

- a. The origin (resin suppliers name, resin production plant), identification (brand name, number) and production date of the resin;
- b. A copy of the quality control certificates issued by the resin supplier noting results of density and melt flow index;
- c. Reports on the tests conducted by the Manufacturer to verify the quality of the resin used to manufacture the geomembrane rolls assigned to the considered facility [these tests should include Resin Density (ASTM D792 Method A or ASTM D1505) and Melt Flow Index (ASTM D1238 Condition 190/2.16)];
- d. Reports on the tests conducted by the Manufacturer to certify the quality of the liner sheet.

4.1.2 Geomembrane Manufacturing

Prior to liner delivery and installation, the Manufacturer shall provide the CQA Manager/RPR with the following:

- a. The properties sheet including, at a minimum, all specified properties, measured using test methods indicated in the specification, or equivalent;
- b. The CQA Manager/RPR shall verify that:
 - i. The property values certified by the geosynthetic Manufacturer meet all of the specifications; and
 - ii. The measurement of properties by the Manufacturer are properly documented, and that the test methods used are acceptable.

4.1.3 Rolls

After receipt of material, the Manufacturer shall provide the CQA Manager/RPR with one quality control certificate for every roll of geosynthetic provided. The quality control certificate shall be signed by the Manufacturer's responsible party. The quality control certificate shall include at a minimum:

- a. Roll numbers and identification
- b. Results of quality control tests. As a minimum, ASTM test methods shall be used to test for thickness, tensile strength, and tear resistance.

4.2 Delivery, Storage and Handling

4.2.1 Delivery and Handling

- a. The geosynthetic products shall be packaged and shipped by appropriate means to prevent damage of the material. Off-loading and storage of the geosynthetic is the responsibility of the Contractor. The Contractor shall be responsible for replacing any damaged or unacceptable material. Geosynthetic products shall be carefully off loaded prior to unwrapping any product. For off-loading, appropriate equipment equipped with a cloth sling shall be used.
- b. No off-loading shall be performed unless CQA Manager/RPR and/or CQA Monitor is present. Damage during off-loading shall be documented by the CQA Manager/RPR and/or CQA Monitor. All damaged products must be separated from the undamaged products until the proper disposition of that material has been determined by the CQA Manager/RPR and/or CQA Monitor.
- c. Geosynthetic products shall be stored so as to be protected from light, puncture, dirt, grease, water, moisture, mud, mechanical abrasions, and excessive heat that may damage the geosynthetic material. The rolls shall be stored on a prepared level surface (not wooden pallets) without sharp edges and shall not be stacked more than two rolls high (rolls shall be limited to a maximum of 5 feet diameter).

4.2.2 Storage

The delivered material shall be stored in a location (or several locations) such that on-site transportation and handling are minimized. Storage space shall be protected from theft, vandalism, passage of vehicles, and be adjacent to the area to be lined.

SECTION 5.0 LINER SYSTEM CONSTRUCTION QUALITY ASSURANCE

Construction of the liner system must be in accordance with the approved design plans and Project Specifications. This CQAQCP establishes the construction quality assurance monitoring and testing program designed to ensure construction compliance. The liner system quality assurance testing program consists of the testing requirements of the HDPE liner, GCL, and drainage material. Quality assurance testing and observation are required during construction of liner system components as described below.

5.1 Geosynthetic Clay Liner

5.1.1 Conformance Testing

Conformance testing shall be performed by the Quality Assurance Laboratory to assure compliance with the specifications. Samples shall be taken at the rate of one per 100,000 square feet of installed GCL. The following tests shall be performed on the samples:

- a. Bentonite Mass per Unit Area (ASTM D 5993)
- b. Bentonite Swell Index (ASTM D 5890)
- c. Bentonite Fluid Loss (ASTM D 5891)

5.1.2 Execution

5.1.2.1 Base Grade Preparation

- a. Preparation of the base grade shall consist of the top six inches of the in-situ material being compacted to 90 percent of the standard Proctor density (ASTM D698) at no more than 4 percentage points wet or dry of optimum moisture content. Compaction shall be documented on the Field Compaction Testing Log (Appendix B). Acceptance of the subgrade by the Contractor shall be documented using the Subgrade Surface Acceptance Form (Appendix B).
- b. The surface of the subgrade shall be smooth, uniform, free from sudden changes in grade (such as vehicular ruts), rocks, stones, debris, and deleterious materials. During actual placing and seaming of the geomembrane, the subgrade shall be kept free of all standing water. If the subgrade below the geomembrane becomes wet and unstable, it shall be dried and recompacted.
- c. All fill shall consist of well graded material that is free of organic, trash, clayballs, and other deleterious material that could damage the geomembrane. The upper six (6) inches of the finished subgrade shall not contain stones or debris larger than one half (1/2) inch. The subgrade shall have no sudden sharp or abrupt changes in grade.
- d. The subgrade shall be protected from desiccation, flooding and freezing. Protection, if required, may consist of a thin plastic protective cover (or other material, as approved by the Engineer) that is installed over the completed

- subgrade until placement of the geomembrane liner begins. Subgrades found to have desiccation cracks greater than one half (1/2) inch in width or depth, or which exhibit swelling, heaving, or other similar conditions, shall be replaced or reworked.
- e. The CQA Manager/RPR shall inspect and approve the base grade before installation of the geosynthetic clay liner can proceed. It shall be the Contractor's responsibility to properly prepare and maintain the base grade in a smooth, uniform, and compacted condition during installation of the liner.
 - f. If the base grade is damaged during liner installation, the Contractor shall restore, recompact and test the area and retest the base grade prior to installing the liner.
 - g. The Contractor shall protect the geosynthetic clay liner delivered to the site from inclement weather conditions using plastic sheeting on other method approved by the Engineer. The stockpile shall be barricaded from any traffic that may occur near the stockpile.

5.1.2.2 Geosynthetic Clay Liner Placement

- a. GCL rolls should be delivered to the working area of the site in their original packaging. Immediately prior to deployment, the packaging should be carefully removed. Unless otherwise specified, the GCL shall be installed such that the product name printed on one side of the GCL faces up.
- b. Rolls shall be handled utilizing a solid steel bar inserted through the core bar and slings or chains attached to the ends of the bar. The core bar shall be suspended from a spreader bar so that the edges of the liner are not damaged by the suspending straps or chains.
- c. Traffic across the GCL shall be minimized; Construction equipment shall not be used on top of the GCL. If the installation equipment causes rutting of the basegrade, the base grade must be restored to its originally accepted condition prior to placement.
- d. Care must be taken to minimize the extent to which the GCL is dragged across the base grade in order to avoid damage to the bottom surface of the GCL. A slip sheet or rub sheet shall be used to reduce friction damage during significant movement of the GCL.
- e. The GCL shall be placed so that field seams shall be oriented parallel to the line of maximum slope (i.e. oriented along, not across the slope); the number of field seams in corners and irregular shaped areas shall be minimized; there shall be no horizontal seam within five feet of the toe of the slope.
- f. Seam areas or runs shall be flat and clear of any large rocks, debris, or ruts. Contacting surfaces shall be clean and clear of dirt or native soil with all edges pulled tight to maximize contact and to smooth out any wrinkles or creases. Longitudinal seams shall be overlapped a minimum of 6 inches. End of roll overlap

- shall be a minimum of 12 inches. Where liner is cut to fit in small areas or around structures overlap shall be a minimum of 1 foot and granular bentonite shall be applied at a minimum rate of 0.25 pound per lineal foot of seam. All overlap amounts shall be verified by the Engineer. Overlap seams shall be placed so that the edge of the upper panel aligns with the appropriate match line on the lower panel.
- g. The GCL shall be secured at the top of the slope in an anchor trench with the HDPE liner, as shown on the Drawings. Vertical seams within the anchor trench shall be sealed with an approved adhesive. Seams along the bottom shall be sealed per No. 6 above.
 - h. Seams shall be augmented with granular bentonite at a minimum rate of 0.25 pound per lineal foot, or as recommended by the GCL manufacturer, to ensure seam integrity. Granular bentonite shall be dispersed evenly from the panel edge to the lap line at the manufacturer's recommended rate continuously along all seams or overlap areas. Accessory bentonite shall be of the same type as the material within the composite liner itself. Adhesives may be used on seams to keep panels in contact during backfill operation, if necessary.
 - i. GCL shall be manufactured by the needle punched-reinforced method. GCL shall not be allowed to hydrate to an extent greater than that recommended by the manufacturer. The Engineer, using the manufacturer's criteria, will decide if any wetted materials shall remain or be removed from the premises.
 - j. Large rips or tears shall be repaired by completely exposing the affected area, removing all foreign objects or soil, and by then placing a patch over the damage, with a minimum overlap of 12 inches on all edges. Accessory bentonite shall be placed between the patch and the repaired material at the manufacturer's recommended rate, spread in a 6-inch width.
 - k. Cutting the GCL should be performed using a sharp utility knife. Frequent blade changes are recommended to avoid damage to the geotextile components of the GCL during the cutting process.
 - l. Although direct vehicular contact with the GCL is to be avoided, lightweight, low wheel-pressure vehicles such as 4-wheel ATVs may be used to facilitate the installation of any geosynthetic material placed over the GCL. Vehicle type must be approved by Engineer prior to use.
 - m. Only as much GCL should be deployed in a given day as can be covered during that day by the HDPE liner. In the event wind conditions prohibit deploying HDPE, the GCL may be covered the following morning.

5.1.2.3 Field Quality Control

- a. Documentation files for field quality control shall be maintained by the Contractor. At the end of each work week the files shall be updated and checked to assure that all copies of pertinent project information are included in each file. The Contractor

shall submit daily copies of the documentation to the CQA Certifying Engineer. Forms to be completed include Daily Field Log, Daily CQA Report, Subgrade Surface Acceptance, Material Receiving Log, Daily Panel Placement Log, Daily Seaming Log and Field Compaction Testing Log. Forms are included as Appendix B.

- b. Prior to placement of the HDPE liner over the GCL, the geotextile installation and related work shall be inspected by the CQA Manager/RPR and/or CQA Monitor. All work in the system therein being inspected shall be complete, clean, and ready for use. All work shall meet the requirements as to line, grade, cleanliness, and workmanship, as determined by the CQA Certifying Engineer.
- c. All discrepancies shall be noted and repaired at no additional expense. Final acceptance of the system shall be contingent upon the approval of the CQA Certifying Engineer.

5.2 High Density Polyethylene (HDPE) Geomembrane Liner and Cover

5.2.1 Conformance Testing

- a. A minimum of 60-mil HDPE shall be used in all cell construction. Conformance testing shall be performed by an independent Quality Assurance Laboratory provided by the Owner. The CQA Manager/RPR and/or CQA Monitor shall obtain samples from the delivered material, mark the machine direction and identification number. Samples shall be taken at the rate of one per two acres (approximately 87,000 square feet) of installed liner or a minimum of one per lot. A lot is defined as a group of consecutively numbered rolls from the same manufacturing line. This sampling frequency may be increased as deemed necessary by the CQA Manager/RPR and/or CQA Monitor. The samples shall be taken across the entire roll width and shall not include the first 3 feet. The following conformance tests shall be conducted at the laboratory:
 - I. Thickness (ASTM D5199)
 - II. Density (ASTM D792/D1505)
 - III. Tensile properties (ASTM D6693)
 - IV. Tear resistance (ASTM D1004)
 - V. Carbon black control (ASTM D4218)
 - VI. Carbon black dispersion (ASTM D5596)
 - VII. Puncture resistance (ASTM D4833)
- b. These conformance tests shall be performed in accordance with Appendix A.
- c. All conformance test results shall be reviewed by the CQA Manager/RPR and accepted or rejected, prior to the placement of the geomembrane. All test results shall meet, or exceed, the property values listed in Appendix A. In case of failing test results, the manufacturer may request that another sample be retested by the Quality Assurance Laboratory with Manufacturer's technical representative present during the testing procedures. The retesting shall be paid for by the manufacturer. The Manufacturer may also have the sample retested at two different laboratories approved by the Owner. If both

laboratories report passing results, the material shall be accepted. If both laboratories do not report passing results, all geomembrane material from the lot representing the failing sample will be considered out of specification and rejected

5.2.2 Execution

5.2.2.1 Base Grade Preparation

- a. Base grade preparation shall be accomplished as specified in Section 5.1.2.1 of this CQAQCP, and the GCL shall be installed per Section 5.1.2.2 of this CQAQCP.
- b. The geosynthetic liner material shall be installed over the GCL only after the condition of GCL has been thoroughly inspected, all seams and overlaps are per specified requirements, and approval is given by the CQA Manager/RPR for the work to proceed.

5.2.2.2 Anchor Trench

- a. CQA Manager/RPR shall record information on anchor trench construction in his/her daily report. The anchor trench shall be constructed in accordance with plans and specifications.
- b. Slightly rounded comers shall be provided in the trench to avoid sharp bends in the geomembrane.
- c. The anchor trench shall be adequately drained to prevent water ponding and softening of adjacent soils. The anchor trench shall be backfilled with local fill material and compacted to 90 percent standard Proctor density at no more than 4 percentage points wet or dry of optimum moisture content, ASTM D698.
- d. If the anchor trench is located in a clay susceptible to desiccation, the amount of trench open at any time shall be limited to one day of geomembrane installation capacity

5.2.2.3 Geomembrane Placement

No geomembrane placement shall proceed without the presence of the CQA Manager/RPR or his/her designated CQA Monitor.

- a. Weather Conditions
 - i. Geomembrane placement shall not proceed at an ambient temperature below 40 degrees F or above 104 degrees F unless otherwise authorized, in writing, by the CQA Manager/RPR. Geomembrane placement shall not be performed during precipitation, excessive moisture, in an area of ponded water, or excessive winds so as not to adversely affect the geomembrane installation.
 - ii. Method of Placement
 - a) Each panel of the geomembrane shall be rolled out and installed in accordance with the approved shop drawings prepared by the Contractor. The layout shall be designed to keep field joining of the geomembrane to a minimum and consistent with proper methods of HDPE geomembrane installation.

- b) Geomembrane rolls shall be placed using proper spreader and rolling bars with cloth slings. If a sheet must be replaced a distance greater than its width, a slip sheet shall be used.
 - c) The CQA Manager/RPR and/or CQA Monitor shall inspect each panel, after placement and prior to seaming, for damage and/or defects. Defective or damaged panels shall be replaced or repaired, as approved by the CQA Manager/RPR and/or CQA Monitor.
 - d) The Installer shall not drag the geomembrane sheets on rough soil base grades.
 - e) All geomembrane shall be anchored as shown on the drawings and consistent with Manufacturer's recommendations.
 - f) Personnel working on the geomembrane shall not smoke, wear damaging shoes or involve themselves in any activity that may damage the geomembrane.
 - g) All edges of the geomembrane shall be properly weighted to avoid uplift due to wind. Sandbags, if used, shall be tied shut.
 - h) Vehicular traffic across the geomembrane shall not be allowed.
 - i) All damage shall be recorded and located on the as-built drawings.
 - j) When tying into existing geomembrane, all excavation of previously installed liner shall be performed by hand to prevent damage.
 - k) The geomembrane shall be kept free of debris, unnecessary tools, and materials. In general, the geomembrane area shall remain neat in appearance.
- iii. Liner Boots
- a) HDPE boots or shrouds shall be furnished and installed where indicated on the drawings. The boots shall be of the same material as the geomembrane.
 - b) The geomembrane end of the boots shall terminate in a skirt section suitable for welding to the geomembrane. The overlap between the boot and the geomembrane shall be approximately 18 inches. The boot shall be welded to the geomembrane as previously specified herein.
 - c) Boots and shrouds shall fit snugly around the pipe. Prefabricated material shall be designed to fit site specific condition, for the intended slope and size of pipe.
 - d) Neoprene sponge rubber gasket shall be used between the boot or shroud and the pipe with a stainless steel clamp. An HDPE sacrificial sheet shall be used between the boot or shroud and the clamp for protection.
 - e) For pipes larger than 4 inches in diameter, a second clamp shall be used. The fastener of the second clamp shall be located on the opposite side of the pipe from the first clamp, to compensate for uneven pressure and elongation

5.2.2.4 Seaming Weather Conditions

- a. Normal weather conditions
 - i. Ambient temperature higher than 40 degrees F and lower than 104 degrees F.
 - ii. No precipitation or other excessive moisture, such as fog or dew.
 - iii. No excessive winds.



- iv. These weather conditions shall be fulfilled during seaming process
- b. Cold weather conditions are temperature below 40 degrees F, and the following conditions shall be met to ensure quality seaming process:
 - i. Preheating the surface of the geomembrane to achieve normal temperature range.
 - ii. Preheating may be waived by the CQA Manager/RPR and/or CQA Monitor if the Installer demonstrates that satisfactory welds of equivalent quality may be obtained without preheating at the expected temperature of installation.
 - iii. Preheating devices shall be approved by the Manufacturer.
 - iv. Care shall be taken to assure that surface temperatures are not lowered below the minimum required surface temperature for welding due to winds.
 - v. Additional destructive tests samples shall be taken at the discretion of the CQA Manager/RPR and/or CQA Monitor.
 - vi. Test seams shall be performed under the same ambient temperature conditions as the actual seams
- c. Warm Weather Conditions
 - i. If the ambient temperature is above 104 degrees F, no seaming of geomembrane shall be permitted unless the Installer can demonstrate, to the satisfaction of the CQA Manager/RPR and/or CQA Monitor that geomembrane seam quality is not adversely impacted.
 - ii. Test seams shall be performed under the same ambient temperature conditions as the actual seams.
 - iii. Additional destructive tests shall be taken at the discretion of the CQA Manager/RPR and/or CQA Monitor

5.2.2.5 Field Seams

- a. Individual panels of geomembrane shall be laid out and overlapped by a minimum of 4 inches prior to welding. The area to be welded shall be cleaned and prepared in accordance with the quality control welding procedures.
- b. Single or double track hot wedge fusion welder shall be used for straight welds.
- c. Extrusion welder shall be used for cross seam tees, patches and repairs and penetration boots.
- d. The welding equipment used shall be capable of continuously monitoring and controlling the temperatures in the zone of contact where the machine is actually fusing the geomembrane material so as to ensure that changes in environmental conditions will not affect the integrity of the weld.
- e. No "fish mouths" shall be allowed within the seam area. Where "fish mouths" occur, the material shall be cut, overlapped and a patch extrusion weld shall be applied. All welds upon completion of the work shall be tightly bonded. Any geomembrane area showing injury due to excessive scuffing, puncture, or distress from any cause shall be replaced

- or repaired with an additional piece of geomembrane. The number of patches per 100-foot length shall not exceed five. If more than five patches per 100-foot length are necessary, then the entire 100-foot length of seam shall be removed. Further welding shall cease at this time and the Engineer Field Representative shall be notified.
- f. All seams shall have a seam number that corresponds with the panel layout numbers. The numbering system shall be used in the development of the as-built drawings. Seam numbers shall be derived from the combination of the two panel numbers that are to be welded together.
 - g. All fusion welded "T" seams (i.e., the result of the geomembrane panels placed perpendicular to each other) shall be double welded where possible. The extrusion process shall be used for the second weld.
 - h. All extrudate shall be free of dirt, dry and protected from damage.
 - i. If an extrusion welder is stopped for longer than one minute, it shall be purged to remove heat-degraded extrudate. All purged extrudate shall be placed on a sacrificial sheet and disposed of.
 - j. All seams constructed on sloped surfaces shall be perpendicular (vertical) to the top and toe of slope.
 - k. All vertical panels placed on sloped surfaces shall extend 5 feet inward from the toe of slope or edge of trench.
 - l. All end seams shall be staggered a minimum of 5 feet in length between contiguous panels.
 - m. To prevent moisture buildup during fusion welding, the CQA Manager/RPR and/or CQA Monitor shall determine when it is necessary to place a movable protective layer of plastic (rub sheet) directly below each overlap of geomembrane during the seaming operation.
 - n. If required or determined by the CQA Manager /RPR and/or CQA Monitor, a firm substrate shall be provided by using a flat board or similar hard surface directly under the seam overlap to achieve proper support during seaming operation.
 - o. All seams shall extend across the anchor trench.
 - p. All factory seams, field seams and repair welds shall meet seam strength requirements specified in Appendix A.

5.2.2.6 Field Quality Control

- a. Documentation files for field quality control shall be maintained by the Contractor. At the end of each work week the files shall be updated and checked to assure that all copies of pertinent project information are included in each file. The Contractor shall submit daily copies of the documentation to the CQA Certifying Engineer. Forms to be completed for CQA activities during geomembrane placement, testing and repairs include Daily Field Log, Daily CQA Report, Subgrade Surface Acceptance, Material Receiving Log, Daily Panel Placement Log, Trial Weld Log, Daily Seaming Log, Seam

Inspection Log (Fusion Weld Air Pressure Testing and Extrusion Weld Vacuum Testing), and Destructive Sample Log. Forms are included in Appendix B.

- b. Startup Testing/Trial Welds
 - i. A trial weld 3 feet long from each welding machine shall be run upon the beginning of each shift and every four hours thereafter, under the same conditions as exist for the geomembrane welding. The trial weld shall be marked with date, ambient temperature, and welding machine number. A tensiometer (calibrated no more than 90 days prior to geomembrane installation) shall be required on-site before and during geomembrane installation for the purpose of testing samples. Six specimens of weld 1-in wide shall be cut from the trial weld and tested on site. Specimens shall be tested on-site for shear and peel strength in accordance with Appendix A. No welder may start work until the trial weld has been approved by the CQA Manager/RPR and/or CQA Monitor.
 - ii. Trial welds shall be performed under the same conditions as the actual seams and shall be at least 3 feet long, 1 foot wide after seaming. The material for the trial seam shall be cut out of the geomembrane rolls.
- c. Nondestructive Seam Testing
 - i. The Installer shall perform nondestructive tests on all field seams over their full length. The purpose of this test is to assure continuity and integrity of the seams. Vacuum and air pressure tests shall be used for nondestructive testing. The vacuum test shall be used for extrusion welds and single-track hot wedge welds. The air pressure test shall be used for double track hot wedge welds.
 - ii. Vacuum Testing
 - a) Equipment for testing single wedge fusion seams and extrusion seams shall be comprised of the following:
 - 1) A vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft rubber gasket attached to the bottom, port hole or valve assembly and a vacuum gage.
 - 2) A vacuum tank and pump assembly equipped with a pressure controller and pipe connections.
 - 3) A rubber pressure/vacuum hose with fittings and connections.
 - 4) A plastic bucket and wide paint brush.
 - 5) A soapy solution.
 - b) The following procedures shall be followed by the installer:
 - 1) Excess sheet overlap shall be trimmed away.
 - 2) Clean the window, gasket surfaces and check for leaks.
 - 3) Energize the vacuum pump and reduce the tank pressure to approximately 5 psi.
 - 4) Wet a strip of geomembrane approximately 12 inches by 48 inches (length of box) with the soapy solution.



- 5) Place the box over the wetted area and compress.
 - 6) Close the bleed valve and open the vacuum valve.
 - 7) Ensure that a leak-tight seal is created.
 - 8) For a minimum period of 30 seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.
 - 9) If no bubbles appear after 30 seconds, close the vacuum valve, and open the bleed valve, move the box over the next adjoining area with a minimum of 3-inch overlap and repeat the process.
 - 10) All areas where soap bubbles appear shall be marked and repaired in accordance with Paragraph 5.2.2.7 of this CQAQCP and then retested.
- c) If the seam cannot be tested prior to final installation, the seaming operations shall be observed by the CQA Manager/RPR and/or CQA Monitor for uniformity and completeness.
- iii. Air Pressure Testing (for double track fusion seams only)
- a) The following procedures are applicable to those processes to produce a double seam with an enclosed space.
 - b) Equipment for testing double fusion seams shall be comprised of the following:
 - 1) An air pump equipped with pressure gage capable of generating and sustaining a pressure between 25 and 30 psi and mounted on a cushion to protect the geomembrane.
 - 2) A manometer equipped with a sharp hollow needle, or other approved pressure feed device.
 - c) The following procedures shall be followed by the Installer.
 - 1) Seal both ends of the seam to be tested.
 - 2) Insert needle or other approved pressure feed device into the tunnel created by the double wedge fusion weld.
 - 3) Energize the air pump to a pressure between 25 and 30 psi, close valve and sustain pressure for at least five minutes.
 - 4) If loss of pressure exceeds 4 psi, or pressure does not stabilize, locate faulty area, repair in accordance with Paragraph 5.2.2.7 of this CQAQCP and retest.
 - 5) Remove needle or other approved pressure feed device and seal with an extrusion weld.
- d) Destructive Seam Testing
- i. The purpose of the destructive testing is to evaluate seam strength properties. A minimum of one test sample shall be obtained per 500 feet of completed seam length. The location of samples shall be determined by the CQA Manager/RPR and/or CQA Monitor. Selection of such locations may be prompted by suspicion of overheating, contamination, or other potential cause that may adversely impact the welds. Sampling shall be performed by the installer. Testing of field samples shall be performed in the presence of the CQA Manager/RPR and/or CQA Monitor as described herein.

ii. Sampling Procedures

- a) Samples shall be cut by the Installer at locations chosen by the CQA Manager/RPR and/or CQA Monitor as the seaming progresses.
- b) The seams shall not be covered by another material before they have been tested and accepted by CQA Manager/RPR and/or CQA Monitor.
- c) Upon obtaining each sample, assign a number to the sample and mark it accordingly.
- d) Record sample location on layout drawing.
- e) Record purpose of the sample, statistical routine, or suspicious weld area.
- f) Holes in the geomembrane resulting from destructive seam testing shall be immediately repaired in accordance with Paragraph 5.2.2.7 of this CQAQCP.

iii. Size and Disposition of Samples

- a) The sample for testing shall be 12 inches wide by 36 inches long with the seam centered lengthwise. The sample shall be cut into three parts, labeled, and distributed as follows:
 - 1) One portion to the Installer for field testing (see below for procedure), 12 inches by 12 inches.
 - 2) One portion for Quality Assurance Laboratory testing, 12 inches by 12 inches.
 - 3) One portion to the CQA Manager/RPR for archive storage, 12 inches by 12 inches.

iv. Field Testing

- a) The following shall be performed by the Installer in the presence of the CQA Manager/RPR and/or CQA Monitor:
 - 1) The Installer shall cut ten 1-inch wide replicate specimens from the field testing samples to be tested for shear and peel strength, in accordance with the criteria set in Appendix A.
 - 2) The Installer shall test five specimens for shear seam strength and five for peel strength. Four out of the five replicate test specimens shall pass for the seam to be acceptable
 - 3) Any specimen that fails through the weld or by fusion at the weld sheet interface is a non-FTB (Film Tearing Bond) break and shall be considered a failure even if it achieves the acceptable strengths

v. Quality Assurance Laboratory Test

- a) The Installer shall package and ship destructive test samples to the independent Quality Assurance Laboratory approved by the Owner.
- b) Laboratory test shall include shear and peel strength tests. The minimum acceptable values obtained in these tests shall be in accordance with Appendix A.



- c) At least five specimens shall be tested each for shear and peel strength. A passing test shall meet the minimum required values in a least four of the five specimens tested for each method.
 - d) The Quality Assurance Laboratory shall provide verbal test results to the CQA Manager/RPR and/or CQA Monitor no more than 24 hours after they receive the samples. The CQA Manager/RPR and/or CQA Monitor shall review the laboratory results as soon as they become available
- vi. Procedures for Destructive Test Failure
- a) The following procedures shall apply whenever a sample fails a destructive test, whether that test is conducted in the field or by the Quality Assurance Laboratory. The Installer has two options:
 - 1) The Installer can repair the entire length of the seam between any two passing test locations in accordance with Paragraph 5.2.2.7 of this CQAQCP.
 - 2) The Installer can retrace the welding path to an intermediate location on each side of the original failed test, on both sides, and take a sample for an additional field test. If this test passes, then the seam shall be repaired between that location and the original failed location. If the test fails, then the process is repeated to establish the zone in which the seam should be repaired.
 - b) All acceptable repaired seams shall be bound by two locations from which samples passing laboratory destructive tests have been taken. In cases where repaired seam exceeds 150 feet, a sample taken from the zone in which the seam has been repaired must pass destructive testing. Repairs shall be made in accordance with Paragraph 5.2.2.7 of this CQAQCP.
 - c) The Quality Assurance Laboratory shall document all actions taken in conjunction with destructive test failures.

5.2.2.7 Repair Procedures

- a. Any portion of the geomembrane exhibiting signs of any kind of defect, or failing a destructive or a nondestructive test, shall be repaired. Several procedures exist for the repair of these areas. The final decision as to the appropriate repair procedure shall be made by the CQA Manager/RPR and/or CQA Monitor.
- b. The repair procedures available include:
 - i. Patching, used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.
 - ii. Spot welding or seaming, used to repair small tears, pinholes, or other minor, localized defects.
 - iii. Capping, used to repair large lengths of failed seams.
 - iv. Removing bad seam and replacing with a strip of new material welded in place.
- c. For any repair method, the following provisions shall be satisfied:

- i. Surfaces of the geomembrane which are to be repaired using extrusion methods shall be abraded no more than one hour prior to the repair.
 - ii. All surfaces shall be clean and dry at the time of the repair.
 - iii. All seaming equipment used in repairing procedures shall be qualified.
 - iv. All patches and caps shall extend at least 4 inches beyond the edge of the defect.
 - v. All patches shall have rounded corners.
- d. Repair Verification
- i. Each repair shall be numbered and logged by the Installer. Each repair shall be nondestructively tested using the methods described in Paragraph 5.2.2.6 Part 2 of this CQAQCP, as appropriate. Repairs which pass the nondestructive test shall be taken as an indication of an adequate repair. Repairs more than 150 feet long may be of sufficient length to require destructive test sampling, at the discretion of the CQA Manager/RPR and/or CQA Monitor. A failed test of the repaired section indicates that the repair shall be redone and retested until passing test results are achieved. The CQA Manager/RPR and/or CQA Monitor shall observe all nondestructive testing of repairs. The Installer shall record the number of each repair, date, and test outcome.

5.2.2.8 Wrinkles

Large wrinkles that remain in the sheet as a result of temperature expansion or uneven surface preparation may need removal as determined by the CQA Manager/RPR and/or CQA Monitor in consideration of applied loads on the wrinkle. Should the wrinkle need removing, the lower down-slope edge of the wrinkle shall be cut, overlapped, and repaired as described in 5.2.2.7 of this CQAQCP. Both ends of the wrinkle repair shall be patched. Caution must be taken in removing any wrinkles. Wrinkles are needed to allow for future contraction of the geomembrane, especially in cold weather.

5.2.2.9 Construction Equipment

Construction equipment or vehicles with steel tracks shall not be permitted on the geomembrane. Vehicles with rubber tires may be allowed in accordance with the Manufacturer recommendation. Other equipment such as portable generators and power centers shall be permitted if the support apparatus is protected from damaging the liner, and if care is taken to prevent leaking lubricants from damaging the geomembrane.

5.2.2.10 Disposal of Waste Material

Upon completion of installation, the Contractor shall remove and dispose of all trash, waste material and equipment used in connection with the performed work and shall leave the premises in a condition that is neat and acceptable to the CQA Manager/RPR.

5.2.2.11 Temporary Markers to Identify Waste Disposal Limits

Upon completion of liner system installation, the Contractor shall install temporary markers outside the edge of liner for the purpose of identifying the limits of waste disposal. Limit of

waste markers must be installed a minimum of 11 feet inside the edge of liner. Waste disposal and compaction shall not encroach into the 11-foot buffer zone.

Tire bales are also an approved marker for the limits of waste disposal.

5.3 Granular Fill Material

5.3.1 Testing

At the discretion of the CQA Manager/RPR, conformance testing of the delivered fill materials may be required. If deemed necessary, conformance testing shall be conducted in accordance with the following:

5.3.1.1 Conformance Testing

- a. Liner Protection Material
 - i. Samples of the granular fill material for the protective soil shall be provided for conformance testing by the Quality Assurance Laboratory from each source of liner protection material to assure compliance with the specifications (a minimum of one sample shall be tested from each proposed borrow source and sample frequency shall not be less than requirements below).
 - ii. The following tests shall be performed on the samples prior to placement:
 - a) Sieve Analysis (ASTM D422) – not less than once every 1,000 cubic yards
 - b) Laboratory Hydraulic Conductivity (ASTM D5084) – not less than once every 5,000 cubic yards
- b. Coarse Aggregate
 - i. At least one sample per 1,000 cubic yards for each size of coarse aggregate shall be provided for conformance testing. Sieve analysis (ASTM D422) shall be performed by the Quality Assurance Laboratory on samples from each source of the coarse aggregate to assure compliance with the specifications.

5.3.2 Execution

5.3.2.1 Liner Protection Material

- a. After installation completion and acceptance of the liner system and related work activities, place the liner protection material to thickness and areas as shown on the drawings.
- b. The liner protection material shall be carefully placed to prevent damage to the underlying liner. A minimum of 1-foot of liner protective material shall be maintained between equipment with a ground pressure of less than 5 psi, 2 feet for all other tracked vehicles, and 3 feet for all other wheeled vehicles.
- c. During the placement of the liner protection material, no construction equipment shall be allowed directly on the geomembrane and any damage shall be repaired immediately in accordance with the specifications.
- d. Care shall be taken to protect the geomembrane liner. Sand ramps shall be provided at down slopes and in other heavily traveled areas. All heavily traveled areas shall have a

minimum of three feet of material above the liner. Only large radius turns by the loader and other equipment shall be permitted, as sharp turns may damage the liner.

- e. The liner protection material can only be spread when the HDPE is taut or stretched evenly over the base of the cell. The liner protection material shall not be spread when the HDPE is excessively elongated (i.e., excessive wrinkling) due to higher daytime temperatures and/or exposure to the sun.
- f. Geomembrane Wrinkles - During placement of soil materials over geomembrane, temperature changes or creep may cause wrinkles to develop in the geomembrane. Placement of the 24-inch liner protection material over the HDPE shall be performed in such a manner as to maintain HDPE wrinkles less than three (3) inches in height, and to prevent wrinkles from folding over. Liner protection material placed on top of the HDPE should be backfilled on the HDPE rather than being pushed across the HDPE. This can be accomplished by using a front-end loader to place soil ahead of equipment spreading the soil cover. In no case can material be placed over the geomembrane which may result in the geomembrane folding.

If a wrinkle greater than three (3) inches in height forms, every effort must be made to walk the wrinkle out. If the wrinkle cannot be walked out, it must be repaired either by cutting out excess material or, if possible, by allowing the geomembrane to contract by temperature reduction. The CQA monitor must monitor geomembrane for wrinkles and notify the installer if wrinkles are being covered by soil. The CQA monitor is then responsible for documenting corrective action to remove the wrinkles

- g. The liner protection layer shall be compacted by rolling with a smooth drum roller. The final grade shall be laid to elevations as shown on the drawings.
- h. Liner protection material shall be placed on the side slopes starting at the toe of the slope and working toward the top of the berm.
- i. Liner protection material shall be brought to the work area with earth-carrying equipment, deposited on the previously spread liner protective material, and then pushed onto the uncovered portion of the fabric with graders or bulldozers. This operation shall be repeated until the total area is covered
- j. No material shall be placed, spread, or compacted while the ground or material is frozen or thawing or during unfavorable weather conditions.

5.3.2.2 Field Quality Control

- a. Liner Protection Material
 - i. Samples shall be taken for every 1,000 cubic yards of in-place liner protection material. The sand layer thickness shall be measured periodically throughout the day during construction with a minimum frequency of 5 tests per acre to confirm that the thickness of the installed material is in accordance with the drawings. The samples shall be taken by the CQA Manager/RPR and the following tests shall be performed on the samples by the Quality Assurance Laboratory. The portion of material passing the No. 200 sieve (0.074 mm and



less fraction) shall be no greater than 5 percent by weight and uniformity coefficient (Cu) less than 6 where Cu is defined as D60/D10.

- a) Sieve Analysis (ASTM D422)
 - b) Sand Layer Thickness
- ii. Any sample or area tested shall be rejected, removed, and replaced if it does not meet the requirements of the technical specifications. Reconstructed areas shall have feathered, overlapping edges that tie into adjacent fill material.
- b. Coarse Aggregate
 - i. Samples shall be taken every 50 cubic yards of in-place coarse aggregate. The samples shall be taken by the CQA Manager/RPR and the following tests shall be performed on the samples by the Quality Assurance Laboratory:
 - a) Sieve Analysis (ASTM D422)

5.4 Geotextile Fabrics

5.4.1 Testing

At the discretion of the CQA Manager/RPR, conformance testing of the delivered geotextile fabric materials may be required. **If deemed necessary, conformance testing shall be conducted in accordance with the following:**

5.4.1.1 Conformance Testing

- a. Conformance testing shall be performed by an independent Quality Assurance Laboratory approved by the Owner. CQA Manager shall obtain samples from the delivered material, mark the machine direction and identification number. The Quality Assurance Technician, in the presence of the CQA Manager, will obtain samples from the delivered material, mark the machine direction and identification number. Samples shall be taken at the rate of one sample per lot, but not to exceed one conformance test per 100,000 square feet of material. A lot is defined as a group of consecutively numbered rolls from the same manufacturing line. This sampling frequency may be increased as deemed necessary by the CQA Manager. The samples shall be taken across the entire roll width and shall not include the first 3 feet. This sampling frequency may be increased as deemed necessary by the CQA Manager. The samples shall be taken across the entire roll width and shall not include the first 3 feet. The following conformance tests shall be conducted at the laboratory.
 - i. Mass per unit area (ASTM D5261)
 - ii. Grab tensile strength (ASTM D4632)
 - iii. Grab tensile elongation (ASTM D4632)
 - iv. Trapezoidal tear strength (ASTM D4533)
 - v. CBR Puncture strength (ASTM D6241)
 - vi. UV resistance (ASTM D7238)



- b. All conformance tests shall be performed in accordance with Appendix A.
- c. All conformance test results shall be reviewed by the CQA Manager and accepted or rejected, prior to the deployment of the geotextile. All test results shall meet, or exceed, the property values listed in Appendix A.
- d. The Manufacturer reserves the right to obtain additional samples from rolls immediately before and after the failing roll or as directed by the Engineer's Field Representative and have them tested. If these rolls pass, then only the failing roll will be rejected. If they fail, then the entire lot will be rejected.

5.4.2 Execution

5.4.2.1 Installation

- a. Panel Placement
 - i. The geotextile shall be installed as shown on the drawings and in accordance with the Manufacturer's recommendations and approved shop drawings. Each panel, in accordance with the approved panel layout, shall have an identification number corresponding to adjacent roll numbers.
 - ii. No mechanical equipment shall be driven directly on top of the geotextile.
 - iii. The subgrade shall be maintained in a smooth, uniform, and compacted condition during installation of the geotextile.
 - iv. Soil cover shall be placed with mechanical equipment; however, no mechanical equipment shall be allowed directly on top of the geotextile material. Equipment shall be driven on pre-deposited material.
 - v. Soil cover shall be brought to the work area with earth-carrying equipment, deposited on the previously spread soil cover, and then pushed onto the uncovered portion of the fabric with graders or bulldozers. This operation shall be repeated until the total area is covered.
 - vi. Soil cover for the side slopes of the geotextile shall be placed at the bottom and pushed up so as to reduce any tension on the geotextile.
 - vii. Damage to the geotextile occurring during the placement of soil cover shall be repaired immediately.
 - viii. All fabric installation shall be completely covered at the end of each workday unless otherwise approved by the CQA Manager.
- b. Field Seaming
 - i. The seams shall be overlapped a minimum of 3 inches.
 - ii. The geotextile panels shall be sewn together. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. Sewn seams shall be continuous, and spot sewing shall be avoided. Seams shall be oriented down slopes perpendicular to grading



contours unless otherwise specified. The thread used to sew the panels shall be as approved by the Manufacturer and shall be of a contrasting color.

5.4.2.2 Field Quality Control

- a. Documentation files for panel placement shall be maintained by the Contractor. At the end of each work week the files shall be updated and checked to assure that all copies of pertinent project information are included in each file. The Contractor shall submit daily copies of the documentation to the CQA Manager. Forms to be completed include Daily Field Log, Daily CQA Report, Material Receiving Log, Daily Panel Placement Log, and Daily Seaming Log. Forms are located in Appendix B.
- b. Prior to placement of the soil cover, the geotextile installation and related work shall be inspected by the Engineer's Field Representative. All work in the system therein being inspected shall be complete, clean, and ready for use. All work shall meet the requirements as to line, grade, cleanliness, and workmanship, as determined by CQA Manager.
- c. All discrepancies shall be noted and repaired. Final acceptance of the system shall be contingent upon the approval of the Engineer's Field Representative.
- d. Upon completion of installation, the Contractor shall remove and dispose of all trash, waste material and equipment used in connection with the performed work and shall leave the premises in a neat condition acceptable to the CQA Manager.



SECTION 6.0 DOCUMENTATION AND CERTIFICATION

6.1 Documentation

The documentation of landfill cell construction is an important factor to ensure the performance of the installed system. The documentation shall be performed as described below and all related activities shall be recorded on the appropriate forms.

6.2 Reporting

All reports shall be prepared by the CQA Manager/RPR. Standard reporting procedures should include preparation of a summary report containing any recorded deficiencies and corrective measures. At a minimum, the reports should include:

- a. Project name, location, and date
- b. Weather conditions including:
 - i. Temperature (daily high and low)
 - ii. Wind conditions
 - iii. Precipitation events
 - iv. Amount of precipitation
- c. Description of construction activities underway and those completed
- d. Equipment and personnel onsite
- e. Types of materials and equipment delivered
- f. Summary of material quantities installed and tested
- g. Any work deficiencies and corrective actions taken
- h. Record of visitors
- i. Any relevant conversations
- j. Any field modifications
- k. Laboratory and/or field test data attached.

6.3 Record Drawings

After the installation and completion of all construction activities, record drawings shall be prepared by the Contractor, CQA Surveyor and CQA Certifying Engineer and submitted to the Supervising Authority/Contract Owner and NMED. The record drawings shall include final as-built drawings approved by a professional engineer to verify that all contours and elevations are in general accordance with the Project Plans and Specifications.

Record drawings shall include, but not be limited to:

- As-built subgrade excavation contours and grades
- As-built top of liner foundation contours and grades
- Soil density test locations
- Geosynthetic seam layout drawings

- As-built top of liner protection soil contours and grades illustrating constructed grades, elevations, thicknesses, liner terminations, and interim termination berms
- As-built vertical and horizontal survey data at 50-foot increments along Cell 4B/Cell 5 edge of liner future tie-in
- Survey ties (bearing and distance) from the two (2) exterior cell boundary corners (Cell 4B and future Cell 5 boundary) and one permanent survey control monument. Horizontal and vertical control points/on-site benchmarks will be provided for each of the cell corners.

6.4 Certification

A certification report shall be prepared by the CQA Manager/RPR and the CQA Certifying Engineer certifying the construction of the liner system. The report, at a minimum, shall include:

- a. Certification letter stating that construction activities were conducted in accordance with the Project Plans and Specifications
- b. Description and location of the site
- c. Description of the construction activities
- d. Description of the location, frequency, and results of all the testing conducted during construction
- e. Description of steps and methods followed to report and retest the failed areas and results of the retesting
- f. A copy of the record drawings
- g. A copy of all the forms completed during construction activities
- h. Photographs documenting significant construction elements including before and after conditions for corrective action items
- i. Problems during construction and resolutions
- j. Summary of general construction progress
- k. **Note** - In accordance with 20.9.3.21(D) NMAC, the Town of Taos shall secure financial assurance and submit the appropriate documentation prior to the initial receipt of waste in new Cell 4B. The appropriate financial assurance documentation will be provided with the submittal of the liner certification report.

Upon receipt and review by the CQA Certifying Engineer, the report shall be sealed by the CQA Certifying Engineer and submitted to the Contract Owner and NMED.

APPENDIX A

MATERIAL PROPERTIES



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**Table A-1
GCL Material Properties**

MANUFACTURER'S CERTIFICATIONS

<i>MATERIAL PROPERTY</i>	<i>TEST METHOD</i>	<i>TEST FREQUENCY ft²</i>	<i>REQUIRED VALUES</i>
Bentonite Swell Index ¹	ASTM D 5890	1 per 50 tons	24 ml/2g min.
Bentonite Fluid Loss ¹	ASTM D 5891	1 per 50 tons	18 ml max.
Bentonite Mass/Area ²	ASTM D 5993	40,000 ft ²	0.75 lb/ft ² min
GCL Grab Strength ³	ASTM D 6768	200,000 ft ²	30 lbs/in MARV
GCL Peel Strength ³	ASTM D 6496	40,000 ft ²	3.5 lbs/in min
GCL Index Flux ⁴	ASTM D 5887	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec max
GCL Hydraulic Conductivity ⁴	ASTM D 5887	Weekly	5 x 10 ⁻⁹ cm/sec max
GCL Hydrated Internal Shear Strength ⁵	ASTM D 6243	Periodic	500 psf typ @ 200 psf

CQA CONFORMANCE TESTING (Site Specific Material)

<i>MATERIAL PROPERTY</i>	<i>TEST METHOD</i>	<i>TEST FREQUENCY ft²</i>	<i>REQUIRED VALUES</i>
Bentonite Swell Index	ASTM D 5890	100,000 ft ²	24 ml/2g min.
Bentonite Fluid Loss	ASTM D 5891	100,000 ft ²	18 ml max.
Bentonite Mass/Area ²	ASTM D 5993	100,000 ft ²	0.75 lb/ft ² min

NOTES:

- Bentonite property tests performed at a bentonite processing facility before shipment to GCL production facilities.
- Bentonite mass/area reported at 0 percent moisture content.
- All tensile strength testing is performed in the machine direction using ASTM D6768. All peel strength testing is performed using ASTM D6496. Upon request, tensile and peel results can be reported per modified ASTM D4632 using 4 inch grips.
- Index flux and permeability testing with deaired distilled/deionized water at 80 psi cell pressure, 77 psi headwater pressure and 75 psi tailwater pressure. Reported value is equivalent to 925 gal/acre/day. This flux value is equivalent to a permeability of 5x10-9 cm/sec for typical GCL thickness. Actual flux values vary with field condition pressures. The last 20 weekly values prior the end of the production date of the supplied GCL may be provided.
- Peak values measured at 200 psf normal stress for a specimen hydrated for 48 hours. Site-specific materials, GCL products, and test conditions must be used to verify internal and interface strength of the proposed design.



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5610 Ward Road, Suite 130 ♦ Arvada, CO 80002
303.239.9011 ♦ fax 303.293.0745 ♦ www.soudermiller.com

**Table A-2
HDPE (Smooth) Material Properties**

MANUFACTURER'S CERTIFICATIONS								
MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY	REQUIRED MINIMUM VALUES					
			40 mil	60 mil	80 mil	100 mil		
Melt Flow Index (g/10 min)	ASTM D 1238	1/100,000 ft ² min. 1 per resin batch	≤ 1.0					
Resin Density (gm/cm ³)	ASTM D 1505	1/100,000 ft ² min. 1 per resin batch	≥ 0.93					
Thickness (mi. avg.) mil Lowest individual reading (-10%)	ASTM D 5199	Every roll	40 36	60 54	80 72	100 90		
Sheet Density, g/cm ³	ASTM D1505/D792	200,000 lb	0.94	0.94	0.94	0.94		
Tensile Properties (each direction):	ASTM D 6693, Type IV, 2 ipm	20,000 lb						
Strength at Break, lb/in			152	228	304	380		
Strength at Yield, lb/in			84	126	168	210		
Elongation at Break, %			700	700	700	700		
Elongation at Yield, %			12	12	12	12		
Tear Resistance, lb	ASTM D 1004	45,000 lb	28	42	56	70		
Puncture Resistance, lb	ASTM D 4833	45,000 lb	72	108	144	180		
Carbon Black Content, %	ASTM D 4218	20,000 lb	2.0					
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Only near spherical agglomerates, 10 views in cat. 1 or 2					
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	500 hr					
Oxidative Induction Time, min	ASTM D 3895, 200° C; O ₂ , 1 atm	200,000 lb	≥ 100 mins					
CQA CONFORMANCE TESTING (Site Specific Material)								
MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY ft² (m²)					REQUIRED VALUES	
Thickness (mi. avg.) mil Lowest individual reading (-10%)	ASTM D 5199	Every roll (field test)	40 36	60 54	80 72	100 90		
Sheet Density, g/cm ³	ASTM D1505/D792	1 test/2 acres (87,000 ft ²)	0.94	0.94	0.94	0.94		
Tensile Properties (each direction):	ASTM D 6693, Type IV, 2 ipm							
Strength at Break, lb/in			152	228	304	380		
Strength at Yield, lb/in			84	126	168	210		
Elongation at Break, %			700	700	700	700		
Elongation at Yield, %			12	12	12	12		
Tear Resistance, lb	ASTM D 1004		28	42	56	70		
Puncture Resistance, lb	ASTM D 4833	72	108	144	180			
Carbon Black Content, %	ASTM D 4218	2.0						
Carbon Black Dispersion	ASTM D 5596	Only near spherical agglomerates, 10 views in cat. 1 or 2						



Table A-3
HDPE (Textured) Material Properties

MANUFACTURER'S CERTIFICATIONS								
MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY ft²	REQUIRED MINIMUM VALUES					
			40 mil	60 mil	80 mil	100 mil		
Melt Flow Index (g/10 min)	ASTM D 1238	1/100,000 ft ² min. 1 per resin batch	≤ 1.0					
Resin Density (gm/cm ³)	ASTM D 1505	1/100,000 ft ² min. 1 per resin batch	≥ 0.93					
Thickness (mi. avg.) mil Lowest individual reading (-10%)	ASTM D 5994	Every roll	40 36	60 54	80 72	100 90		
Asperity Height (mil)	ASTM D 7466	Every 2 nd roll	16	16	16	16		
Sheet Density, g/cm ³	ASTM D1505/D792	200,000 lb	0.94	0.94	0.94	0.94		
Tensile Properties (each direction):	ASTM D 6693, Type IV, 2 ipm	20,000 lb						
Strength at Break, lb/in			60	90	120	150		
Strength at Yield, lb/in			84	126	168	210		
Elongation at Break, %			100	100	100	100		
Elongation at Yield, %			12	12	12	12		
Tear Resistance, lb	ASTM D 1004	45,000 lb	28	42	56	70		
Puncture Resistance, lb	ASTM D 4833	45,000 lb	72	108	144	180		
Carbon Black Content, %	ASTM D 4218	20,000 lb	2.0					
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Only near spherical agglomerates, 10 views in cat. 1 or 2					
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	500 hr					
Oxidative Induction Time, min	ASTM D 3895, 200° C; 1 atm O ₂	200,000 lb	≥ 100 mins					
CQA CONFORMANCE TESTING (Site Specific Material)								
MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY ft²(m²)	REQUIRED VALUES					
Thickness (mi. avg.) mil Lowest individual reading (-10%)	ASTM D 5994	Every roll (field test)	40 36	60 54	80 72	100 90		
Asperity Height (mil)	ASTM D 7466	1 test/2 acres (87,000 ft ²)	16	16	16	16		
Sheet Density, g/cm ³	ASTM D1505/D792		0.94	0.94	0.94	0.94		
Tensile Properties (each direction):	ASTM D 6693, Type IV, 2 ipm							
Strength at Break, lb/in			60	90	120	150		
Strength at Yield, lb/in			84	126	168	210		
Elongation at Break, %			100	100	100	100		
Elongation at Yield, %			12	12	12	12		
Tear Resistance, lb	ASTM D 1004		28	42	56	70		
Puncture Resistance, lb	ASTM D 4833		72	108	144	180		
Carbon Black Content, %	ASTM D 4218		2.0					
Carbon Black Dispersion	ASTM D 5596	Only near spherical agglomerates, 10 views in cat. 1 or 2						



TABLE A-4
FACTORY AND FIELD SEAMS PROPERTIES
HDPE GEOMEMBRANE - TEXTURED AND SMOOTH

TEST	METHOD	FREQUENCY ft ²	SHEET THICKNESS/REQUIRED VALUES			
			40 mil	60 mil	80 mil	100 mil
HDPE Shear Strength (ppi) ^(1,2)	ASTM D 6392 ^(3,4)	1 per 500 lineal feet of welded seam	80	120	160	200
HDPE Peel Strength (ppi) ^(1,2)						
<i>Fusion Welds</i>			65	95	130	162
<i>Extrusion Welds</i>			52	78	104	130
Peel Separation (%) ^(1,2)			< 10%	< 10%	< 10%	< 10%

Notes:

1. Maximum of one (1) non-FTB (Film Tear Bond) per five (5) specimens tested is acceptable provided that strength requirements are met on that sample. Film Tear Bond (FTB) definition: A failure to the ductile mode of one of the bonded sheets by tearing prior to complete separation to the bonded area. Examples of FTB and the associated locus of break codes are provided in ASTM D 6392.
2. For dual-track seams, both tracks will be tested for compliance with the minimum property values listed above.
3. Destructive seams will be evaluated for strength parameters according to ASTM D 6392, excluding Section 6.3 "Conditioning." Destructive seams will be evaluated for elongation during cold weather seaming. The Geosynthetic Installer is required to submit a cold weather seaming plan for approval along with recommendations in GRI publication GRI GM 9 or superseding GRI guidance document.
4. As modified by NSF 54.
5. If an electronic leak location survey is completed, the destructive seam sampling frequency will be increased from 500 feet to 1,000 feet.



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5610 Ward Road, Suite 130 ♦ Arvada, CO 80002
 303.239.9011 ♦ fax 303.293.0745 ♦ www.soudermiller.com

Table A-5**Required Properties, Test Methods and Values for Geotextile Fabrics**

<i>Property</i>	<i>Test Method ASTM</i>	<i>Mass/Unit Area (oz/yd²)</i>					
Mass per Unit Area (oz/yd ²)	ASTM D 5261	4	6	8	10	12	16
Grab Tensile Strength (lb)	ASTM D 4632	120	170	220	260	320	390
Grab Tensile Elongation (%)	ASTM D 4632	50	50	50	50	50	50
Trapezoidal Tear Strength (lb)	ASTM D 4533	50	70	95	100	125	150
CBR Puncture Strength (lb)	ASTM D 6241	300	435	575	725	925	1125
UV Resistance (%)	ASTM D 4355	70	70	70	70	70	70

NOTES:

1. The property values listed are in weaker principal direction. All values listed are Minimum Average Roll Values (MARV) except UV resistance. Apparent opening size (mm) is a Maximum Average Roll Value. UV is a typical value.



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Table A-6

Final Cover Construction Quality Control Testing

<i>Material/Type of Test</i>	<i>Standard</i>	<i>Frequency</i>	<i>Acceptance Criteria</i>
TEST PAD			
Thickness	--	3 tests/lift	minimum established by Project P&S
Density and Field Compaction (in-place)	ASTM D6938	3 tests/lift	≥ 95% standard Proctor maximum dry density
Grain Size	ASTM D422	1 test/lift	soil type confirmation per Specification
Atterberg Limits	ASTM D4318	1 test/lift	soil type confirmation per Specification
Standard Proctor	ASTM D698	1 test/lift	confirm density/field compaction and perform hydraulic conductivity
Hydraulic Conductivity (undisturbed sample)	ASTM D5084	1 test/lift	≤ 1 x 10 ⁻⁵ cm/sec
Soil Classification	D2487/D2488	1 test/lift	soil type confirmation per Specification
CONSTRUCTION TESTING			
Subgrade (Base Grading)			
Top of Subgrade Elevation	Survey	Minimum 50-ft grid spacing	+/- 0.1 ft
Standard Proctor	ASTM D 698	1 sample/source and 1 test/5,000 CY	confirm density & compaction
Thickness (in-place)	-	1 test/acre (survey on grid)	minimum established by Project P&S
Density and Field Compaction (in-place)	ASTM D6938	4 tests/acre/lift	≥ 95% standard Proctor maximum dry density
Soil Infiltration Layer			
Grain Size	ASTM D422	1 test/1,000 CY	soil type confirmation per Specification
Atterberg Limits	ASTM D4318	1 test/5,000 CY	soil type confirmation per Specification
Standard Proctor	ASTM D698	1 test/source and 1 test/5,000 CY	confirm density/field compaction and perform hydraulic conductivity
Hydraulic Conductivity (remolded sample)	ASTM D5084	1 test/5,000 CY (borrow) and 1 test/2 acres (in-place)	≤ 1 x 10 ⁻³ cm/sec
Thickness (in-place)	--	1 test/acre (survey on grid)	minimum established by Project P&S
Density and Field Compaction (in-place)	ASTM D6938	4 tests/acre/lift	≥ 95% standard Proctor maximum dry density
Soil Infiltration Layer			
Thickness (in-place)	--	1 test/acre (survey on grid)	minimum established by Project P&S



APPENDIX B

CQA FORMS



Souder, Miller & Associates

Engineering ♦ Environmental ♦ Geomatics

Field Report

PROJECT NAME: _____

PROJECT NUMBER & TASK: _____

REPORT NUMBER: _____

CONSTRUCTION OBSERVER: _____

Hours Worked _____

Daily Mileage _____

Lodging _____

Subsistence _____

		Project:	
		Location:	
		Name & Address of Contractor:	
Date:		Work Period:	
Weather: (Rainy, Cloudy, Windy)		Temperature:	
		am: pm:	
Surface Conditions:		Subcontractor(s):	
Contractor's Superintendent:			
Contractor's Crew, by Trade or Craft:			
Contractor's Equipment on Job			No. of Units
Type & Size:			No. in Use

Overview of Work Completed:

Subgrade Surface Acceptance

Date: _____

Project: _____

Site Manager: _____

Project #: _____

Location: _____

Partial: _____

Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. GSE does not accept responsibility for compaction, elevation or moisture content, nor for the surface maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the owner or earthwork contractor.

Geosynthetic Installer :

For Owner / Contractor:

Acceptance Number: _____ Area Accepted: _____ s.f Total Area Accepted to date: _____ s.f.

**TAOS REGIONAL LANDFILL
CELL 5 CONSTRUCTION**

CONSTRUCTION TECHNICAL SPECIFICATIONS

TAOS, NEW MEXICO



PREPARED FOR:

THE TOWN OF TAOS
AS FISCAL AGENT FOR THE TAOS REGIONAL LANDFILL

PREPARED BY:

SOUDER, MILLER & ASSOCIATES

SMA Project No. 4230627

Date: April 2025



Souder, Miller & Associates
Engineering ♦ Environmental ♦ Geomatics

2904 Rodeo Park Drive East, Building 100 ♦ Santa Fe, NM 87505
505.473.9211 ♦ 800.460.5366 ♦ fax 505.471.6675 ♦ www.soudermiller.com

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SECTION 01 00 00 – BASIC REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

1.1.1 CONTRACT DESCRIPTION

- A. The scope of work entails the construction of a new solid waste disposal area including excavation, grading, installation of a GCL, HDPE geomembrane liner, geotextile, a 2-foot-thick protective soil layer (soil cushion) and construction of perimeter earthwork and plywood panels for liner edge protection. Markers identifying the limits of municipal solid waste and limits of liner edge will be installed along the edges of the new cell.
- B. Perform Work of Contract under a stipulated price basis with the Owner in accordance with Conditions of Contract.

1.1.2 SPECIAL CONSIDERATION

- A. Earthwork will be completed by the Contractor, including finishing cells to grade and fine grading.
- B. Contractor is responsible for retaining the services of a New Mexico Licensed Professional Surveyor to complete three surveys: preconstruction survey, a survey upon completion of the subgrade preparation, and a final as-built survey of the Unit.
- C. Contractor is responsible for the excavation and backfilling of required anchor trenches.
- D. Contractor is required to place the protective soil cover over liner materials. Contractor is required to install the protective soil cover in a manner that prevents any damage to the underlying liner system.
- E. Contractor is responsible for the placement of pipe and gravel for leachate system.
- F. Contractor is responsible for providing and placement of geotextile for leachate system.
- G. Contractor is responsible for cell dewatering and cleanup if rainfall occurs during the construction period.
- H. The liner testing is included as a bid item: QA/QC Soil and Liner Testing.
- I. The liner pay quantities will not include liner material in anchor trench, nor overlap, waste, or materials used for Contractor's convenience.
- J. Contractor must provide water for construction at the Contractor's expense. The Owner has indicated that water can be made available for purchase.
- K. Contractor shall prepare record drawing information under the direction of a Licensed Professional Surveyor. Refer to Article 1.8.7 Project Record Documents below and General Notes on the Drawings for specific requirements related to As-Built Drawings.
- L. Contractor must maintain a full set of Drawings, Technical Specifications, and the Construction Quality Assurance (CQA) Plan at the construction site at all times throughout the construction process. All subcontractors must possess at least all Drawings and Technical Specifications pertaining to their portion of the work while on the construction site at all times.

1.1.3 WORK BY OWNER

- A. Not applicable.

1.1.4 CONTRACTOR'S USE OF PREMISES

- A. No work shall be done before 7:00 A.M. or after 7:00 P.M., local time on a working day, on Sundays, or on legal holidays, except as necessary for the proper care and protection of work already performed, or during emergencies.
- B. The Contractor shall make every effort to minimize noise caused by their operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise.
- C. The Contractor shall restrict their operations as nearly as possible to the immediate site. Unnecessary cutting of vegetation adjacent to the site is prohibited. Every effort shall be made to minimize erosion during and after construction and the site shall be returned to its original condition, except where improvements are indicated or required.
- D. The Contractor shall take affirmative action to prevent the misuse of the natural environment, wasting of natural resources, or destruction of natural values.
- E. The Contractor shall conform to all requirements set forth in the latest edition of the New Mexico Standard Specifications for Public Works Construction with latest revision, and Occupational Safety and Health Administration Regulations for trenching, shoring and excavation, and all other activities where such regulations apply. The Contractor and all subcontractors shall conduct all activities in conformance with federal and state laws and regulations relating to occupational health and safety. Authorized inspectors from NMED's Occupational Health and Safety Bureau [the state agency with jurisdiction] shall have unobstructed access to project sites and shall not be impeded in any way from performance of their duties.

1.1.5 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.
- B. The Contractor shall furnish all materials, labor, plant and equipment necessary to complete the contract work as called for by the Technical Specifications and as indicated on the Drawings. Material and work, either expressed or implied, necessary for the satisfactory completion of the contract work shall be considered an integral part thereof.
- C. All standards incorporated herein by reference shall be the latest edition, unless otherwise specified. The abbreviations and applicable standards are described below:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIA	American Institute of Architects
ANSI	American National Standards Institute, Inc.
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CID	Construction Industries Division of the NM Regulation and Licensing Department
EJCDC	Engineers Joint Contract Documents Committee
EPA	Environmental Protection Agency
IBC	International Building Code
ISO	International Organization for Standardization
MSJC	Masonry Standards Joint Committee
NACE	National Association of Corrosion Engineers
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Department of Environment
NMSSPWC	New Mexico Standard Specifications for Public Works Construction
NSF	National Sanitation Foundation

OSHA	Occupational Safety and Health Administration
SAE	Society of Automotive Engineers
SSPC	Steel Structure Painting Council
UL	Underwriters Laboratories, Inc.

1.1.6 MINIMUM WAGE RATE DETERMINATION

- A. Article 13-4-11, NMSA, 1978, requires that prevailing local wages be determined by labor category, and that this prevailing wage be the minimum acceptable pay rate. The Public Works Minimum Wage Act covers all public works construction, alteration, demolition, or repair projects when the project cost is \$60,000 or more, and when the state or any political subdivision is a party. The wage rate determination provided by the New Mexico Department of Workforce Solutions for the present project can be found in an appendix to the Contract Documents.

1.2 PRICE AND PAYMENT PROCEDURES

1.2.1 TESTING AND SURVEYING ALLOWANCES

- A. Testing Allowance: The bid schedule includes a predetermined sum to cover the cost of testing and inspection services as required in the Contract Documents.
- B. Costs Included in Allowance: Subcontracted costs of engaging testing or inspection firm, execution of tests or inspection, and reporting of results.
- C. Survey Allowance: The bid schedule includes a predetermined sum to the cost of surveying services as required in the Contract Documents.
- D. Costs Not Included in Allowance:
 - 1. Incidental labor and facilities required to assist testing or inspection firm.
 - 2. Costs of re-testing upon failure of previous tests as determined by Engineer.
 - 3. Any costs associated with the re-testing of damaged liner during the installation of the protective soil cover layer.
- E. Costs will be drawn from testing allowance and paid based on invoice(s) submitted to Contractor by testing or inspection firm(s). Contractor shall submit appropriate NTTC form to testing firm to assure tax is not included on invoices.

1.2.2 SCHEDULE OF VALUES

- A. Submit schedule of values on the Construction Progress sheet within the Application for Payment forms provided in the Construction Contract Documents [Progress Estimate sheet within the Application for Payment forms (EJCDC Form C-620 (2013 Edition))].
- B. Base structure of Schedule of Values on Bid Schedule with identical item numbering, quantities, and values.
- C. Submit Schedule of Values in duplicate at least 15 days prior to first Progress Meeting.

1.2.3 APPLICATIONS FOR PAYMENT

- A. Application for Payment is synonymous with Partial Payment Estimate.
- B. Submit four [4] copies of each application on the Partial Payment Estimate form provided in the Contract Documents, together with updated Schedule of Values identifying fully the list of items in the Application for Payment.
- C. The Partial Payment Estimate forms consist of four sections: Cover Sheet, Construction Progress spreadsheet, Materials-On-Hand form, and Monthly Construction Progress Certificate. The purpose of the Monthly Construction Progress Certificate is to provide a complete account of all

change orders/claims for the corresponding contract period, and all outstanding change orders/claims from previous contract periods and waives any rights to further adjustments in contract times or price for any change orders/claims that originated in the current contract period.

- D. Payment Period: Monthly, however payment may not be made until 45 days after receipt of the bill for portions of the Work to be paid for with State funding.

1.2.4 CHANGE PROCEDURES

- A. All Change Orders shall be prepared on the form provided in these Contract Documents.
- B. Unit Price Change Order: For pre-determined unit prices and quantities, Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work not pre-determined, refer to Article 11 - Change of Contract Price; Change of Contract Times, of the Standard General Conditions (EJCDC C-700 Standard General Conditions of the Construction Contract).

1.2.5 UNIT PRICES

- A. Engineer or Engineer's representative will take measurements and compute quantities accordingly; all quantities will be in place. The Contractor will assist in taking measurements and determination of work completed prior to preparation of corresponding Application for Payment.

1.2.6 ALTERNATES

- A. Not applicable.

1.3 ADMINISTRATIVE REQUIREMENTS

1.3.1 COORDINATION

- A. Coordinate scheduling, submittals, and Work of various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- C. Submit a Traffic Control Plan, if relevant, which shall be approved by the Engineer before continuing with the project.
- D. All existing signs, markers, delineators, etc. within the construction limits shall be removed, stored, and reset.
- E. Subject to the approved Traffic Control Plan, at least one lane shall be open to traffic at all times. Provide proper signage to maintain the traffic lane in such a manner as to assure proper safety to the traveling public on all affected roads. Provide access to all private and public property at all times except when grading, excavation and backfill operations are being conducted immediately in front of the property, in which case access will not be denied for more than 4 hours without approval from the Engineer.
- F. Traffic lanes provided during construction shall be maintained in such a condition under all weather conditions, so as to permit the reasonable passage of passenger vehicles and shall be kept graded and smooth and watered several times daily, as needed, to control dust.
- G. The Contractor is responsible for obtaining all necessary permits from the Construction Industries Division of the Regulation and Licensing Department of the State of New Mexico and any other regulatory agency having jurisdiction.
- H. Contractor is responsible for timely scheduling of any pertinent inspections with local, county and state agencies with jurisdiction, and as required by the permits.

- I. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.
- J. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement.
- K. All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to the Owner at the address stated on the signature page of the Agreement.
- L. Any such notice shall be deemed to have been given as of the time of actual delivery, in the case of mailing, when the same should have been received in due course of post, or in the case of telegrams, certified mail, or telephone facsimiles, at the time of actual receipt as the case may be.

1.3.2 SUSPENSION OF WORK

- A. The Owner may order suspension of work due to seasonal or other conditions unsuitable for construction work.
- B. Maintenance during suspension: Prior to suspension for any cause, the Contractor shall take necessary precautions to protect the work during the period of suspension from any factors which would contribute to its deterioration.
- C. Time elapsed during suspension of the work shall not count as contract time. The Contractor shall make no claim for damages due to delay, additional mobilization charges, nor any additional costs that may be incurred solely due to suspension of work.
- D. Requests for additional time to be added after the “contract completion date” due to delays or extra work shall be made to the Owner in writing by the Contractor within ten (10) days after the time of the occurrence of the delay or receipt of a Change Order for extra work. Such requests shall set forth the justification for the additional time.
- E. Upon approval, the additional contract time shall then be in full force and effect, the same as though it were the original date for completion and will be shown as the completion date plus an amount of additional working days. Any time required to complete the work beyond the contract time or additional contract time will result in the assessment of liquidated damages, as specified in the Contract Documents. Failure to make such requests within the above limits will be considered as a waiver on the part of the Contractor as to the need for additional contract time.

1.3.3 FIELD ENGINEERING

- A. Contractor is responsible for establishing elevations, lines, and levels and to certify and confirm elevations and locations of the Work, conforming with the Contract Documents, with the Project Engineer prior to performing any excavation.
- B. Verify field measurements are as indicated on shop drawings or as instructed by Manufacturer.
- C. From the information provided by the Owner, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, easement alignments, stakes for pipe locations and other working points, lines, elevations and cut sheets.

1.3.4 PRE-CONSTRUCTION CONFERENCE

- A. Engineer will schedule Pre-Construction Conference after Notice of Award for affected parties.
- B. The Contractor, or their duly authorized representative, and subcontractor representatives will attend the meeting.

1.3.5 PROGRESS MEETINGS

- A. Schedule in coordination with the Engineer at maximum monthly intervals and attend all Progress Meetings throughout progress of the Work.
- B. The purpose of the meetings will be to review the following:
 - 1. Work progress since previous meetings.
 - 2. Field observations, problems, conflicts.
 - 3. Problems which impede construction schedule.
 - 4. Corrective measures and procedures to regain projected schedule.
 - 5. Revisions to construction schedule.
 - 6. Plan progress and schedule during succeeding work period.
 - 7. Coordination of schedules.
 - 8. Off-site fabrication and delivery schedules.
 - 9. Maintenance of quality standards.
 - 10. Proposed changes, construction schedule and completion date.
 - 11. Coordination of separate contracts.
 - 12. Record or "as-built" drawings of completed work.
 - 13. Other business as required.
 - 14. Regulatory requirements including OSHA, New Mexico Board of Labor, and others as applicable.
 - 15. Funding requirements including RUS, NMED, NMFA, DFA, USEPA and others as applicable.
- C. During each meeting, the Contractor is required to present any issues which may impact their Work, with a plan to resolve these issues expeditiously.
- D. Together with each payment application, Contractor must present the current as-built drawings reflecting all work performed to date.

1.4 SUBMITTALS

1.4.1 SUBMITTAL PROCEDURES

- A. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
- B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions and elevations, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.
- D. Revise and resubmit submittals as required by the Project Engineer; identify changes made since previous submittal.
- E. Submit number of copies Contractor requires, plus two copies Project Engineer will retain, at a minimum, unless otherwise indicated at the Pre-Construction Conference.
- F. Transmit each submittal with Project Engineer accepted form.
- G. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- H. Prior to commencing construction activities, Contractor must submit a safety plan for approval by Engineer.

1.4.2 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within fifteen [15] days after date of Owner-Contractor Agreement for Engineer review.
- B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- E. Indicate delivery dates for Owner furnished products and products identified under Allowances.

1.4.3 PROPOSED PRODUCTS LIST

- A. Unless required as an attachment to Bid, within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of Manufacturer, trade name, and model number of each product per CQA Plan.
- B. For products specified only by reference standards, give Manufacturer, trade name, model or catalog designation, and reference standards.

1.4.4 PRODUCT DATA

- A. Product Data: Submit to Engineer for review, per CQA Plan, for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit copies and distribute in accordance with Submittal Procedures article.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement Manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.4.5 SHOP DRAWINGS

- A. Shop Drawings:
 - 1. Submitted to Engineer, per CQA Plan, for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. Include detail design calculations, shop drawings, fabrication, installation drawings, erection drawings, list, graphs, catalog sheets, data sheets, and similar items.
 - 3. Design calculations shall bear the signature and seal of an engineer registered in the appropriate branch and in the state wherein the project is to be built, unless otherwise directed.
 - 4. After review, provide copies and distribute in accordance with Submittal Procedures article and for record documents purposes as specified.
 - 5. Except as may otherwise be indicated herein, the Engineer will return copies of each submittal to the Contractor with comments noted thereon, within 30 calendar days following their receipt by the Engineer.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Submit number of opaque reproductions Contractor requires, plus two copies Engineer will retain.

1.4.6 TEST REPORTS

- A. Submit for Engineer's knowledge as contract administrator or for Owner.
- B. Submit test reports, per CQA Plan, for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.4.7 MANUFACTURER'S INSTRUCTIONS AND CERTIFICATES

- A. When specified in individual specification sections, submit Manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. When specified in individual specifications sections, submit certifications by Manufacturer to Engineer, in quantities specified for Product Data.
- D. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- E. Certificates may be recent or previous test results on material or Product but must be acceptable to Engineer.

1.5 QUALITY REQUIREMENTS

1.5.1 QUALITY CONTROL

- A. Monitor quality control over suppliers, Manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality, per CQA Plan.
- B. Comply with Manufacturer's instructions.
- C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.5.2 TOLERANCES

- A. Monitor fabrication and installation tolerance control of installed products over suppliers, Manufacturers, products, site conditions, and workmanship, to produce acceptable Work, per CQA Plan. Do not permit tolerances to accumulate.
- B. Comply fully with Manufacturer's tolerances.

1.5.3 REFERENCES

- A. Conform to reference standards by date of issue current as of date of Contract Documents.
- B. When specified reference standard conflict with Contract Documents, request clarification from Engineer before proceeding.

1.5.4 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. Per CQA Plan, when specified in individual specification sections, require material or product suppliers or Manufacturers to furnish qualified staff personnel to observe site conditions and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions that are supplemental or contrary to Manufacturer's written instructions.

1.5.5 EXAMINATION

- A. Per CQA Plan, verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify utility services are available, of correct characteristics, and in correct location.
- C. Contractor is solely responsible for utility location, protection and verification. Contractor must notify New Mexico One Call System Inc., at 811, and all local utility providers, three (3) days before starting utility line construction.
- D. It shall be the responsibility of the Contractor to become acquainted with the location of all underground structures which may be encountered, or which may affect the Work hereunder.

1.6 TEMPORARY FACILITIES AND CONTROLS

1.6.1 TEMPORARY SERVICES

- A. Provide, maintain and pay for suitable quality water service as required.
- B. Maintain uninterrupted water and electric service to all properties adjoining the Work, except where specifically approved by the authority having jurisdiction. Services damaged by the Contractor shall be immediately and permanently repaired or replaced at the expense of the Contractor. Give a minimum of 48-hour advance notice to occupants of adjacent properties before interrupting any service. Any interruption of service shall be kept to the minimum length of time possible.
- C. Until final inspection and approval of the Work and issuance of the Certificate of Substantial Completion, the Contractor is responsible for all Work directly or indirectly affected by the Contractor's activities. Such responsibility continues for all Work detailed on the punch list that may accompany the Certificate of Substantial Completion, until satisfactorily completed by the Contractor and approved by the Owner and Engineer.
- D. Furnish, install and maintain any temporary water storage structures, electrical connections, meters, wiring, outlets, switches, lamps, etc., as necessary for the work. The Contractor shall provide such temporary heat as may be necessary for the prevention of injury to the work or material through dampness or cold. All temporary connections, installations, facilities and supplies furnished or installed as specified in this paragraph, shall be removed prior to the completion of the Contract, and the premises left perfectly clean and satisfactory to the Owner.
- E. Maintain ambient temperature above freezing in enclosed/occupied areas where construction is in progress, unless indicated otherwise in specifications.
- F. Provide temporary electricity and power outlets for construction operations, connections, branch wiring, distribution boxes, and flexible power cords as required. Do not disrupt Owner's need for continuous service.
- G. Provide and maintain required sanitary facilities and enclosures in clean and sanitary condition.

1.6.2 ACCESS ROADS

- A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.
- B. Existing on-site roads, designated by the Owner, may be used for construction traffic.

1.6.3 PROGRESS CLEANING AND WASTE REMOVAL

- A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

- B. Remove waste and surplus materials, rubbish, and construction facilities from site. Restore all job sites and adjoining areas, including roads and driveways, to a condition equal to or better than the original status. Special attention will be made to not disturb unimproved roads by placing any excavated material to the sides of these roads when water lines are located along the right-of-way.
- C. Brush and trees shall be felled parallel to the right-of-way to minimize damage to trees and structures on adjacent property. All brush, treetops, stumps and other debris shall be removed from the right-of-way and disposed of by the Contractor, subject to and in conformity with the special provisions applying to the tract of land involved (if any). The Contractor shall not destroy nor remove any trees, shrubbery, nor any other improvements, without permission of the Owner.
- D. The Contractor shall not dispose of debris, refuse or sanitary wastes in an open dump or in a natural watercourse, whether on public or private property, or in such places that undesirable wastes can eventually be exposed or carried to a natural watercourse.

1.6.4 PROJECT IDENTIFICATION

- A. Provide project sign as indicated in the Contract Documents, to design and colors as indicated.
- B. Project sign must be produced by a professional sign company with at least three years of experience producing similar signage. The proposed project sign shall require a submittal for approval, whether included on a Submittals Checklist or not, and shall include materials to be incorporated and name of company that will produce the sign.
- C. Erect on site at location approved by Engineer.
- D. The Contractor shall not erect or permit the erection of advertising signs. Only minimal identification and direction signs shall be permitted on the site. Unnecessary or obnoxious posters, pictures, signs, symbols, drawings or writing on work, material or equipment, resulting from vandalism or other causes, shall be covered or removed by the Contractor.

1.6.5 BARRIERS AND FENCING

- A. Provide barriers or fencing to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

1.6.6 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.

1.6.7 SECURITY

- A. Provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.6.8 WATER CONTROL

- A. Provide erosion control.
- B. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. The Contractor shall submit to the Owner's Representative a Storm Water Pollution Prevention Plan (SWPPP) that will address all construction phases and the proposed pollution prevention and sediment control measures. This shall be done in accordance with the National Pollution Discharge Elimination System (NPDES) general permit requirements for all construction activities and shall include all required reporting.

- D. The Contractor shall conduct their operations to minimize damage to natural watercourses, and shall not permit petroleum products, volatile fluid wastes, or any other wastes which are prohibited by local ordinances, or excessive amounts of silt, clay, or mud to enter any drainage system. The bed of natural watercourses or man-made irrigation ditches shall be restored to normal gradient and cross-section after being disturbed.

1.6.9 POLLUTION AND ENVIRONMENTAL CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Provide dust control, erosion and sediment control, noise control, pest control and rodent control to allow for proper execution of the Work. Short term effects of dust produced by equipment will be mitigated by sprinkling traffic areas with water. Motor equipment shall be kept in repair and equipped with anti-pollution devices, if possible, to cut down on exhaust emissions. Burning as a method of cleaning or disposal will not be permitted without approval of the proper authorities.
- C. Comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act of 1970 (42 U.S.C. 1251 et seq.) as amended. Violations shall be reported to the New Mexico Environment Department.
- D. The Contractor shall be responsible for the reporting and the cleanup of spills associated with project construction and shall report and respond to spills of hazardous materials such as gasoline, diesel, motor oil, solvents, chemicals, toxic and corrosive substances, and other materials which may be a threat to the public health or the environment. The Contractor shall be responsible for reporting past spills encountered during construction and of current spills not associated with construction. Reports shall be made to the New Mexico Environment Department Emergency Response Team at (505) 827-4308 or (505) 470-3657 and to the Owner's Representative. The Contractor shall clean up any unreported spills associated with project construction identified after construction.

1.6.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion review.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.7 PRODUCT REQUIREMENTS

1.7.1 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.
- C. Provide interchangeable components of same Manufacturer for components being replaced.

1.7.2 DELIVERY, HANDLING, STORAGE, AND PROTECTION

- A. Per CQA Plan, deliver, handle, store, and protect Products in accordance with Manufacturer's instructions.

1.7.3 SUBSTITUTIONS

- A. Substitutions will only be considered when Product becomes unavailable through no fault of Contractor, or where an "approved equal" is specifically allowed elsewhere in the Technical Specifications or noted on the Drawings.
- B. Specific Manufacturers may be required for certain items in order to maintain consistency with the Owner's existing inventory. In such cases, substitutions will not be allowed as indicated in each specification section where applicable.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. Submit three [3] copies of request for Substitution to the Engineer for consideration. Limit each request to one proposed Substitution.

1.8 EXECUTION REQUIREMENTS

1.8.1 CLOSEOUT PROCEDURES

- A. Submit written certification Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Submit final Application for Payment identifying total adjusted Contract Price, previous payments, and amount remaining due.
- C. Among required closeout submittals include: Release of Liens, Consent of Surety, and Certification of Labor Standards.

1.8.2 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Upon completion of the work under this contract, thoroughly clean and make any needed repairs caused by damage during construction to any existing utilities or other structures on the site.
- C. Notify the Engineer in writing once final cleaning is complete. The final estimate will not be prepared until the Contractor has complied with all requirements set forth and the Engineer has made a final inspection of the entire work and is satisfied that it is properly constructed, and the site properly cleaned.

1.8.3 STARTING OF SYSTEMS

- A. Provide seven [7] days notification prior to start-up of each item.
- B. Ensure each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with Manufacturer's instructions.
- D. Submit written report stating equipment or system has been properly installed and is functioning correctly.

1.8.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

1.8.5 TESTING, ADJUSTING, AND BALANCING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Owner retains the right to appoint, employ, and pay for services of independent firm to perform testing, adjusting, and balancing. Reports will be submitted by independent firm to Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with requirements of Contract Documents.
- C. Contractor will cooperate with independent firm; furnish assistance as requested.
- D. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

1.8.6 PROTECTING INSTALLED CONSTRUCTION

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- C. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material Manufacturer.
- D. Prohibit traffic from landscaped areas.

1.8.7 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of Contract Documents to be utilized for record documents.
- B. Record actual revisions to the Work. Record information concurrent with construction progress.
- C. Specifications: Legibly mark and record at each Product section description of actual Products installed.
- D. Record Documents and Shop Drawings (As-Built Drawings): Legibly mark each item to record actual construction. Deliver two (2) sets of As-Built Drawings with redlines to the Owner upon completion of the Project. The As-Built Drawings will be submitted to the Engineer prior to processing of final payment to the Contractor.
- E. Contractor shall prepare record drawing information under the direction of a Licensed Professional Surveyor. Final As-Built Record Drawings shall include elevation at invert of top of leachate riser, northing and easting of top of leachate riser and other appurtenances, finished grade elevations, markers identifying the municipal solid waste limits and the edge of liner limits, and adjacent drainage infrastructure. Ties to surface features for triangulation purposes in the field shall also be included. Final As-Built Record Drawings shall be stamped by a Licensed Professional Surveyor, tied to established control monuments and other reference points (including D.O.T. monuments and mile markers if available) on the New Mexico State Plane Coordinate System, Central Zone, NAD83/NAVD88 datum, stating combined ground-to-grid scale factor used, equipment used and date of completion of survey.
- F. Submit documents to Engineer together with claim for final Application for Payment.

1.8.8 WARRANTIES

- A. Execute and assemble transferable warranty documents from subcontractors, suppliers, and Manufacturers for all products with extended warranties beyond one (1) year.
- B. Submit prior to final Application for Payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 31 05 16 – GRANULAR MATERIALS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install granular fill materials as shown on the drawings and as specified herein. Associated work includes screening and washing, excavation, loading, shipping, delivering, stockpiling, placement and installation of granular fill materials.
- B. Related Sections:
 - 1. Section 31 05 19.13 - Geotextile Fabric.
 - 2. Section 31 05 19.16 - Polyethylene Geomembrane Liner.
 - 3. Section 31 10 00 - Site Clearing.
 - 4. Section 31 22 13 - Rough Grading.

1.2 SUBMITTALS

- A. Contractor shall submit project related information and appropriate testing reports, as listed within the CQA Plan, on material to be utilized for the protective soil layer and the granular material around leachate collection pipe.
- B. If Contractor elects to utilize on-site granular materials, Contractor must submit detailed information on how material will be processed to meet requirements stated within the CQA Plan and layout of processing area.

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

- A. Granular Materials
 - 1. Basis of Measurement: Cubic Yards.
 - 2. Basis of Payment: Payment will be based on volume as measured in place.

1.4 QUALIFICATIONS

- A. The work shall be performed by a firm that has experience in processing and installation of lateral drainage layers and protective soil layer on top of geosynthetic liners.

1.5 EXCAVATION AND STORAGE

- A. If the Contractor elects to utilize on-site materials during excavation activities, Contractor will identify those materials that will be utilized for the granular material. The Contractor shall remove and store this material properly until the granular material is installed. Screening and washing of the material may be required and will be accomplished by the Contractor at no additional cost to the project. Provision shall be implemented to minimize surface water impact on the stockpile. Removal and placement of granular material shall be done in a manner to minimize intrusion of soils adjacent to and beneath the stockpile.
- B. If Contractor elects to import the granular material, Contractor shall designate a location to stockpile material and provide information on how materials will be protected and kept free of contamination.

PART 2 PRODUCTS

2.1 PROTECTIVE SOIL LAYER GRANULAR MATERIAL

- A. Protective soil layer material, whether from an on-site source or an imported material, must meet one of the following specifications:
 - 1. The portion of material passing the No. 200 sieve (ASTM D422) (0.074 mm and less fraction) shall be no greater than 5% by weight and uniformity coefficient (Cu) less than 6 where Cu is defined as D60/D10. Material shall be free of any organic matter.
- B. If an on-site material is to be utilized, screening and washing of the material may be required, which shall be conducted within the limits of the stockpile and processing area. Contractor shall supply the screening and washing at no additional cost to the project.
- C. Any material not meeting the specification listed above in Section 2.1 A. must be approved in advance. Any testing, modeling, and costs associated with the approval process as well as additional costs if a geocomposite or geotextile are required are incidental.

2.2 LEACHATE COLLECTION PIPE GRANULAR MATERIAL

- A. The leachate collection pipe granular material shall be a clean crushed stone with a 5/8 inch minimum particle size and a 2 inch maximum particle size. No organic material will be allowed in this material. If an on-site material which can meet the requirements specified is available, screening and washing of the material will be required. Contractor shall supply the screening and washing at no additional cost to the project.
- B. A 3-inch thick bedding layer of clean ¾ inch to 1 inch diameter granular material shall be placed beneath the leachate collection pipe in the bottom of the leachate collection trench.

PART 3 EXECUTION

3.1 PROTECTIVE SOIL LAYER GRANULAR MATERIAL PLACEMENT

- A. After installation completion and acceptance of the liner system and related work activities, place the protective soil layer granular material to thickness and areal extent as shown on the Drawings.
- B. The protective soil layer granular material shall be carefully placed to prevent damage to the underlying liner. A minimum of 1-foot of protective soil layer granular material shall be maintained between equipment with a ground pressure of less than 5 psi, 2 feet for all other tracked vehicles, and 3 feet for all other wheeled vehicles.
- C. During the placement of the protective soil layer granular material, no construction equipment shall be allowed directly on the liner system and any damage shall be repaired immediately in accordance with Sections 31 05 19.13, 31 05 19.15, and/or 31 05 19.16.
- D. Final spreading of the protective soil layer granular material shall be conducted using a low ground pressure (less than 5 psi) dozer approved by the CQAE, and shall be performed in a manner that protects the underlying geosynthetics, i.e., no sharp turns, quick stops, etc.
- E. The Contractor shall repair, at no expense to the Owner, any damage to the underlying liner caused during protective soil layer granular material placement.
- F. A minimum final thickness of 2.0 feet of protective soil layer granular material will be placed over the floor and sideslope liner.
- G. Care shall be taken to protect the liner. Sand ramps shall be provided at down slopes and in other heavily traveled areas. All heavily traveled areas shall have a minimum of 3 feet of material above

the liner system. Only large radius turns by any equipment shall be permitted as sharp turns may damage the liner.

- H. Protective soil layer granular material shall not be placed over a fold in the liner. Placement of liner protection materials shall be such that material placement will “walk out” wrinkles, not fold them over.
- I. The protective soil layer shall be compacted by proof rolling with a smooth drum roller. The final grade shall be laid to elevations as shown on the Drawings. The protective soil layer shall be compacted to the satisfaction of the Engineer. Compactive efforts shall not damage the underlying liner components.
- J. Protective soil layer materials shall be placed on the side slopes starting at the toe of the slope and working toward the top of the cell.
- K. Protective soil layer material can only be spread when the liner is taut or stretched evenly over the base of the landfill. The protective soil layer granular material shall not be spread when the liner is elongated due to higher daytime temperatures and exposure to sun. The Contractor must make provisions to cover the liner under non elongated conditions.
- L. The moisture content of the protective soil layer granular material shall be at or slightly above the optimum moisture content for the material being utilized during the entire time when the roller is working on the material. If, in the opinion of the Engineer, the material is too dry for proper compaction, the Contractor shall spray the material with a sufficient quantity of clean water to bring the material to proper moisture content.
- M. No protective soil layer granular material shall be placed, spread, or compacted while the ground or material is frozen or thawing or during unfavorable weather conditions. The protective soil layer surface must be made smooth and free from ruts or indentations at the end of any working day when significant precipitation is forecast and/or at the completion of the compaction operations in that area in order to prevent saturation of the material.

3.2 FIELD QUALITY CONTROL

- A. Samples of the granular fill material for the protective soil shall be provided for conformance testing by the Quality Assurance Laboratory from each source of liner protection material to assure compliance with the specifications (a minimum of one sample shall be tested from each proposed borrow source and sample frequency shall not be less than requirements below).
- B. Samples of the protective soil layer shall be taken and grain size (ASTM D422) and uniformity coefficient shall be determined at a frequency of not less than every 1,000 cubic yards of in-place material.
- C. Samples of the protective soil layer shall be taken and tested for Hydraulic Conductivity (ASTM D5084) as follows:
 - 1. Borrow Source: 1 Test per 5,000 cubic yards minimum
 - 2. In-place: 1 test per 2 acres minimum
- D. The protective soil layer material layer thickness shall be measured a minimum of five times per acre during construction to confirm that the thickness of the installed material is in accordance with the Drawings.
- E. Testing for the Leachate Collection Pipe Granular Material shall consist of a grain size analysis at the frequency of 1 test per day and no less than 1 test per 1,000 cubic yards of material placed.
- F. The samples shall be taken by the qualified inspector, or his/her designated representative and the material will be tested to determine if the material meets specifications as outlined in Part 2 of this section.

- G. Any sample or area tested shall be rejected, removed, and replaced if it does not meet the requirements of the technical specifications. Reconstructed areas shall have feathered, overlapping edges that tie into adjacent fill material.

END OF SECTION

SECTION 31 05 19.13 – GEOTEXTILE FABRIC

PART 1 GENERAL

1.1 SUMMARY

- A. Contractor shall furnish all geotextile, labor, incidental materials, tools, supervision, transportation, and installation equipment necessary for the installation of geotextile, as specified herein, and as shown on the Drawings. All materials used shall meet the requirements of this specification.
- B. Related Sections:
 - 1. Section 31 05 16 - Granular Materials.
 - 2. Section 31 05 19.15 - Geosynthetic Clay Liner.
 - 3. Section 31 05 19.16 - Polyethylene Geomembrane Liner.
 - 4. Section 31 10 00 - Site Clearing.
 - 5. Section 31 23 23 - Backfill.
 - 6. Section 33 47 28 – PVC Leachate Pipe.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D 5261 - Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
 - 2. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 3. ASTM D 4533 - Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles.
 - 4. ASTM D 4491 - Standard Test Method for Water Permeability of Geotextiles by Permittivity.
 - 5. ASTM D 4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 - 6. ASTM D 4354 - Standard Practice for Sampling of Geosynthetics for Testing.
 - 7. ASTM D 4759 - Standard Practice for Determining the Specifications Conformance of Geosynthetics.
 - 8. ASTM D 6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geomembranes - Related Products.

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

- A. Geotextile Fabric
 - 1. Basis of Measurement: Square Feet.
 - 2. Basis of Payment: Measurement for payment will be based on the actual plan view area of geotextile installed as measured by survey. Measurement will be from the inside edge of the anchor trench or the seam along the tie-in to existing Cell 4B and the western edge (future Cell 6) of the cell where the geotextile terminates in the liner termination berm. The cost for material not included in the measured pay quantity (overlap, waste, material in anchor trench, etc.) must be included in the unit price.

1.4 SUBMITTALS

- A. Prior to material delivery to project site, the Contractor shall provide the Engineer with a written certification or Manufacturer's quality control data which displays that the geotextile meets or exceeds minimum average roll values (MARV) specified herein.

- B. The Contractor shall submit, if required by the Engineer, Manufacturer's quality control manual for the geotextile to be delivered to the site.

1.5 MATERIAL WARRANTY

- A. The geotextile Manufacturer shall warrant the material against manufacturing defects and material degradation for a period of 1 year from the date of installation. The Manufacturer shall replace any material which fails from the above causes within the warranty period. The Manufacturer shall furnish a written warranty covering these requirements.

1.6 GUARANTEE

- A. The Contractor shall guarantee the geotextile against defects in installation and workmanship for the period of 1 year commencing with the date of Final Acceptance. The guarantee shall include the services of qualified service technicians and all materials and labor required for the repairs at no expense to the Owner.

PART 2 PRODUCTS

2.1 GEOTEXTILE

- A. The non-woven needle punched geotextile specified herein shall be made from polypropylene staple fiber.
- B. The geotextile shall be manufactured from prime quality virgin polymer.
- C. The geotextile shall be able to withstand direct exposure to ultraviolet radiation from Sun for up to 30 days without any noticeable effect on index or performance properties.
- D. Geotextile shall meet or exceed all material properties listed in Table 1.
- E. Geotextile shall be used as follows:
 - 1. 8 oz/sy non-woven geotextile for the leachate collection piping, enveloping the leachate collection trench gravel, and in the leachate collection sump.
 - 2. 12 oz/sy non-woven geotextile for the geotextile cushion layer overlying the HDPE liner.

Table 1 Minimum Average Roll Values (MARV) Required for Nonwoven Needle Punched Geotextiles

TESTED PROPERTY	TEST METHOD	FREQUENCY	NW4	NW6	NW8	NW10	NW12	NW16
AASHTO M288 Class			3	2	1	>1	>>1	>>>1
Mass per Unit Area, oz/yd ² (g/m ²)	ASTM D 5261	90,000 ft ²	4 (135)	6 (200)	8 (270)	10 (335)	12 (405)	16 (540)
Grab Tensile Strength, lb (N)	ASTM D 4632	90,000 ft ²	120 (530)	170 (755)	220 (975)	260 (1,155)	320 (1,420)	390 (1,735)
Grab Elongation, %	ASTM D 4632	90,000 ft ²	50	50	50	50	50	50
CBR Puncture Strength, lb (N)	ASTM D 6241	90,000 ft ²	300 (1,347)	435 (1,936)	575 (2,557)	725 (3,225)	925 (4,116)	1125 (5,006)
Trapezoidal Tear Strength, lb (N)	ASTM D 4533	90,000 ft ²	50 (220)	70 (310)	95 (420)	100 (445)	125 (555)	150 (665)
Apparent Opening Size, Sieve No. (mm)	ASTM D 4751	540,000 ft ²	70 (0.212)	70 (0.212)	80 (0.180)	100 (0.150)	100 (0.150)	100 (0.150)
Permittivity, sec ⁻¹	ASTM D 4491	540,000 ft ²	1.8	1.5	1.30	1.0	0.8	0.7
Permeability, cm/sec	ASTM D 4491	540,000 ft ²	0.22	0.30	0.30	0.30	0.29	0.27
Water Flow Rate, gpm/ft ² (l/min/m ²)	ASTM D 4491	540,000 ft ²	135 (5,495)	110 (4,480)	95 (3,865)	75 (3,050)	60 (2,440)	50 (2,035)
UV Resistance (% retained after 500 hours)	ASTM D 4355	per formulation	70	70	70	70	70	70
Roll Length ⁽¹⁾ , ft (m)			300 (91)	300 (91)	300 (91)	300 (91)	300 (91)	300 (91)
Roll Width ⁽¹⁾ , ft (m)			15 (4.6)	15 (4.6)	15 (4.6)	15 (4.6)	15 (4.6)	15 (4.6)
Roll Area, ft ² (m ²)			4,500 (418)	4,500 (418)	4,500 (418)	4,500 (418)	4,500 (418)	4,500 (418)

NOTES:

- The property values listed are in weaker principal direction. All values listed are Minimum Average Roll Values (MARV) except apparent opening size in mm and UV resistance. Apparent opening size (mm) is a Maximum Average Roll Value. UV is a typical value.
- ⁽¹⁾ Roll lengths and widths have a tolerance of ±1%.

2.2 MANUFACTURER

- A. All rolls of the geotextile shall be identified with permanent marking on the roll or packaging, with the Manufacturers name, product identification, roll number and roll dimensions.

2.3 TRANSPORT

- A. Transportation of the geotextile shall be the responsibility of the Contractor.
- B. During shipment, the geotextile shall be protected from ultraviolet light exposure, precipitation, mud, dirt, dust, puncture, or other damaging or deleterious conditions.
- C. Upon delivery at the job site, the Contractor shall ensure that the geotextile rolls are handled and stored in accordance with the Manufacturer’s instructions to prevent damage.
- D. Geotextile rolls are to be unloaded under the supervision of the liner Installer using straps or other devices that will prevent damage to the liner material.
- E. Geotextile rolls should be stored in their original wrappers on smooth, well-drained subgrade, and shall be stacked not more than four rows high.

- F. If any material damage is noted during unloading or storage, the damaged areas are to be marked with a permanent marker, and a notation made as to the roll number, location of damage, and type of damage.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 00 00 1.5 - Quality Requirements: Examination of existing conditions before starting work.

3.2 QUALITY ASSURANCE

- A. The Engineer shall examine the geotextile rolls upon delivery to the site and report any deviations from project specifications to the Contractor.

3.3 INSTALLATION

- A. The subgrade shall be inspected and approved by the Engineer prior to installation of the geotextile. The subgrade shall be maintained in a smooth, uniform and compacted condition during the installation of the fabric.
- B. The geotextile shall be handled in such a manner as to ensure that it is not damaged in any way. Should the Contractor damage the geotextile to the extent that it is no longer usable as determined by these specifications or by the Engineer, the Contractor shall replace the geotextile at their own cost.
- C. The geotextile shall be installed to the lines and grades as shown on the contract drawings and as described herein.
- D. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self-weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.
- E. Materials will not be deployed when moisture, high winds, or other adverse weather conditions are expected. Geotextiles shall be weighted by sandbags or approved equivalent to temporarily secure material in the event of light winds. Such anchors shall be installed during placement and shall remain in place until replaced with cover material.
- F. The Contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geotextile. Should damage to such material occur due to the fault of the Contractor, the latter shall repair the damaged materials at their own cost and to the satisfaction of the Engineer.
- G. During placement of the geotextile, care shall be taken not to entrap soil, stones or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the Engineer.
- H. The geotextile shall not be exposed to precipitation prior to being installed.
- I. The geotextile shall be seamed using heat seaming or stitching methods as recommended by the Manufacturer and approved by the Engineer. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat seaming, fusion welding techniques recommended by the Manufacturer shall be used. The sewing machine shall sew a two-thread double locked stitch. The thread used for sewing shall be a color that contrasts with the geotextile material.

- J. The Contractor shall not use heavy equipment to traffic above the geotextile without approved protection. Refer to Section 31 05 16, Article 3.2.
- K. The geotextile shall be covered as soon as possible after installation and approval. Installed geotextile shall not be left exposed for more than 15 days.
- L. Material overlying the geotextile shall be carefully placed to avoid wrinkling or damage to the geotextile.
- M. Geotextile panels are to be oriented at right angles to the toe of the berm (downslope) where possible. Transition seams between vertical slope panels and horizontal panels will be located at least 5 feet from the toe of the slope on the cell floor. Geotextile panels are to be deployed in a manner that minimizes field seams.
- N. Geotextile deployment shall start at the top of the slope and proceed downward. Adjacent rolls are to be overlapped a minimum of 3 inches.
- O. Damaged areas are to be patched with an additional layer of geotextile material. The patch is to overlap the damaged area by a minimum of 12 inches on each side and is to be heat bonded to the main layer of geotextile. If the damaged area is in excess of 50% of the roll width, the damaged section is to be removed and replaced with undamaged geotextile material.

END OF SECTION

SECTION 31 05 19.15 – GEOSYNTHETIC CLAY LINER

PART 1 GENERAL

1.1 SUMMARY

- A. This specification covers the technical requirements for the furnishing and installation of the geosynthetic clay liner described herein. All materials used shall meet the requirements of this specification, and all work shall be performed in accordance with the procedures provided herein and the contract drawings.
- B. Related Sections:
 - 1. Section 31 05 19.13 - Geotextile Fabric.
 - 2. Section 31 05 19.16 - Polyethylene Geomembrane Liner.
 - 3. Section 31 23 23 - Backfill.

1.2 DEFINITIONS

- A. For the purposes of this specification guideline, the following terms are defined below
 - 1. Geosynthetic Clay Liner (GCL) - A manufactured hydraulic barrier consisting of clay bonded to a layer or layers of geosynthetics.
 - 2. Geomembrane - An essentially impermeable geosynthetic composed of one or more geosynthetic sheets.
 - 3. Geotextile - Any permeable geosynthetic comprised solely of textiles.
 - 4. Minimum Average Roll Value - For geosynthetics, the value calculated as the typical value minus two (2) standard deviations from documented quality control test results for a defined population from one specific test method associated with one specific property.
 - 5. Overlap - Where two adjacent GCL panels contact, the distance measuring perpendicular from the overlying edge of one panel to the underlying edge of the other.
 - 6. Typical Value - The mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with one specific property.

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

- A. Geosynthetic Clay Liner
 - 1. Basis of Measurement: Square Feet.
 - 2. Basis of Payment: Measurement for payment will be based on the actual plan view area of GCL installed as measured by survey. Measurement will be from the inside edge of the anchor trench or the seam along the tie-in to existing Cell 4B and the western edge (future Cell 6) of the cell where the GCL terminates in the liner termination berm. The cost for material not included in the measured pay quantity (overlap, waste, material in anchor trench, etc.) must be included in the unit price.

1.4 SUBMITTALS

- A. With the bid, the Contractor shall furnish the following information:
 - 1. Conceptual description of the proposed plan for placement of the GCL panels over the area of installation.

2. GCL Manufacturer's MQC Plan for documenting compliance to Articles 2.1 and 2.2 of these specifications.
 3. GCL Manufacturer's historical data for reinforced GCL of a) 10,000-hour creep shear testing per Article 2.2 D and b) seam flow data at 2 psi confining pressure per Article 2.2 E.
 4. A copy of GCL Manufacturer's ISO quality Certificate of Registration.
- B. At the Engineer's or Owner's request the Contractor shall furnish:
1. A representative sample of the GCLs.
 2. A project reference list for the GCL(s) consisting of the principal details of at least ten projects totaling at least 10 million square feet (100,000 square meters) in size.
- C. Prior to shipment, the Contractor shall furnish the GCL Manufacturer's Quality Assurance/Quality Control (QA/QC) certifications to verify that the materials supplied for the project are in accordance with the requirements of this specification.
- D. As installation proceeds, the Contractor shall submit certificates of subgrade acceptance, signed by the Contractor and CQA Inspector (see Articles 1.6 and 3.3) for each area that is covered by the GCL.

1.5 QUALIFICATIONS

- A. GCL Manufacturer must have produced at least 10 million square feet of GCL, with at least 8 million square feet installed.
- B. The GCL Installer must either have installed at least 500,000 square feet of GCL, or must provide to the Engineer satisfactory evidence, through similar experience in the installation of other types of geosynthetics, that the GCL will be installed in a competent, professional manner.

1.6 CONSTRUCTION QUALITY ASSURANCE (CQA)

- A. The Owner and Engineer shall provide an inspector for CQA of the GCL installation. The inspector shall be an individual or company who is independent from the Manufacturer and Installer, who shall be responsible for monitoring and documenting activities, related to the CQA of the GCL, throughout installation. The inspector shall have provided CQA services for the installation of the proposed or similar GCL.
- B. Testing of the GCL, as necessary to support the CQA effort, shall be performed by a third-party laboratory retained by the Contractor and independent from the GCL Manufacturer and Installer. The laboratory shall have provided GCL CQA testing of the proposed or similar GCL for at least 5 completed projects totaling not less than 1 million square feet.
- C. CQA shall be provided in accordance with the GCL CQA Manual provided by the Engineer.

PART 2 PRODUCTS

2.1 GENERAL

- A. The GCL shall consist of a layer of natural sodium bentonite clay encapsulated between two geotextiles and shall comply with all of the criteria listed in this Section.
- B. Prior to using an alternate GCL, the Contractor must furnish independent test results demonstrating that the proposed alternate material meets all requirements of this specification. The Contractor also must obtain prior approval of the alternative GCL by the Project Engineer.

2.2 MATERIALS

- A. Acceptable reinforced GCL products are Bentomat® ST, as manufactured by CETCO Lining Technologies, GSE Bentoliner as manufactured by GSE Environmental, or an engineer-approved equal. The delineation of these areas requiring reinforced GCL shall be agreed by the Installer and the Engineer prior to installation.
- B. The reinforced GCL shall have the properties presented in Table 2.
- C. The reinforced GCL shall have 10,000-hour test data for large-scale constant-load (creep) shear testing under hydrated conditions. The displacement shall be 0.11 in. (2.7 mm) or less at a constant shear load of 250 psf (12 kPa) and a normal load of 500 psf (24 kPa).
- D. The reinforced GCL shall have seam test data from an independent laboratory showing that the seam flow with a grooved cut in the nonwoven geotextile is less than $1 \times 10^{-8} \text{ m}^3/\text{m}^2/\text{s}$ at 2 psi hydraulic pressure.
- E. The minimum acceptable dimensions of full-size GCL panels shall be 150 feet in length. Short rolls (those manufactured to a length greater than 70 feet but less than a full-length roll) may be supplied at a rate no greater than 3 per truckload or 3 rolls every 36,000 square feet of GCL, whichever is less.
- F. A 6-inch (150 mm) overlap guideline shall be imprinted on both edges of the upper geotextile component of the GCL as a means for providing quality assurance of the overlap dimension. Lines shall be printed in easily visible, non-toxic ink.

2.3 PRODUCT QUALITY DOCUMENTATION

- A. The GCL Manufacturer shall provide the Contractor or other designated party with manufacturing QA/QC certifications for each shipment of GCL. The certifications shall be signed by a responsible party employed by the GCL Manufacturer and shall include:
 - 1. Certificates of analysis for the bentonite clay used in GCL production demonstrating compliance with the parameters swell index and fluid loss presented in the Table 2.
 - 2. Manufacturer's test data for finished GCL product(s) of bentonite mass/area, GCL tensile strength and GCL peel strength (reinforced only) demonstrating compliance with the index parameters presented in Table 2.
 - 3. GCL lot and roll numbers supplied for the project (with corresponding shipping information).

2.4 PRODUCT LABELING

- A. Prior to shipment, the GCL Manufacturer shall label each roll, identifying:
 - 1. Product identification information (Manufacturer's name and address, brand product code).
 - 2. Lot number and roll number.
 - 3. Roll length, width and weight.

2.5 PACKAGING

- A. The GCL shall be wound around a rigid core whose diameter is sufficient to facilitate handling. The core is not necessarily intended to support the roll for lifting but should be sufficiently strong to prevent collapse during transit.
- B. All rolls shall be labeled and bagged in packaging that is resistant to photo-degradation by ultraviolet (UV) light.

Table 2 GCL Certified Properties Table

MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY ft ² (m ²)	REQUIRED VALUES
Bentonite Swell Index ¹	ASTM D 5890	1 per 50 tons	24 ml/2g min.
Bentonite Fluid Loss ¹	ASTM D 5891	1 per 50 tons	18 ml max.
Bentonite Mass/Area ²	ASTM D 5993	40,000 ft ² (4,000 m ²)	0.75 lb/ft ² (3.6 kg/m ²) min
GCL Grab Strength ³	ASTM D 6768	200,000 ft ² (20,000 m ²)	30 lbs/in (53 N/cm) MARV
GCL Peel Strength ³	ASTM D 6496	40,000 ft ² (4,000 m ²)	3.5 lbs/in (6.1 N/cm) min
GCL Index Flux ⁴	ASTM D 5887	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec max
GCL Hydraulic Conductivity ⁴	ASTM D 5887	Weekly	5 x 10 ⁻⁹ cm/sec max
GCL Hydrated Internal Shear Strength ⁵	ASTM D 5321 ASTM D 6243	Periodic	500 psf (24 kPa) typ @ 200 psf

NOTES:

1. Bentonite property tests shall be performed at a bentonite processing facility before shipment to GCL production facilities.
2. Bentonite mass/area reported at 0 percent moisture content.
3. All tensile strength testing is performed in the machine direction using ASTM D6768. All peel strength testing is performed using ASTM D6496. Upon request, tensile and peel results can be reported per modified ASTM D4632 using 4 inch grips.
4. Index flux and permeability testing with deaired distilled/deionized water at 80 psi (551kPa) cell pressure, 77 psi (531 kPa) headwater pressure and 75 psi (517 kPa) tailwater pressure. Reported value is equivalent to 925 gal/acre/day. This flux value is equivalent to a permeability of 5x10⁻⁹ cm/sec for typical GCL thickness. Actual flux values vary with field condition pressures. The last 20 weekly values prior to the end of the production date of the supplied GCL may be provided.
5. Peak values measured at 200 psf (10 kPa) normal stress for a specimen hydrated for 48 hours. Site-specific materials, GCL products, and test conditions must be used to verify internal and interface strength of the proposed design.

2.6 ACCESSORY BENTONITE

- A. The granular bentonite sealing clay used for overlap seaming, penetration sealing, and repairs shall be made from the same natural sodium bentonite as used in the GCL and shall be as recommended by the GCL Manufacturer. Seaming of GCLs shall be conducted in accordance with the Manufacturer's guidelines for each particular GCL.

PART 3 EXECUTION

3.1 SHIPPING AND HANDLING

- A. The Manufacturer assumes responsibility for initial loading the GCL. Shipping will be the responsibility of the party paying the freight. Unloading, on-site handling and storage of the GCL are the responsibility of the Contractor, Installer or other designated party.
- B. A visual inspection of each roll should be made during unloading to identify if any packaging has been damaged. Rolls with damaged packaging should be marked and set aside for further inspection. The packaging should be repaired prior to being placed in storage.
- C. The party responsible for unloading the GCL should contact the Manufacturer prior to shipment to ascertain the appropriateness of the proposed unloading methods and equipment.

3.2 STORAGE

- A. Storage of the GCL rolls shall be the responsibility of the Installer. A dedicated storage area shall be selected at the job site that is away from high traffic areas and is level, dry and well drained.
- B. Rolls should be stored on smooth subgrade or wooden supports in a manner that prevents sliding or rolling from the stacks and may be accomplished by the use of chock blocks. Rolls should be stacked at a height no higher than that at which the lifting apparatus can be safely handled (no higher than four).
- C. All stored GCL materials and the accessory bentonite must be covered with a plastic sheet or tarpaulin until their installation.
- D. The integrity and legibility of the labels shall be preserved during storage.
- E. GCL rolls are to be unloaded under supervision of the liner Installer using straps or other devices that will prevent damage to the liner material.
- F. If any material damage is noted during unloading, the damaged areas are to be marked with a permanent marker, and a notation made as to the roll number, location of damage, and type of damage.

3.3 EARTHWORK

- A. Any earthen surface upon which the GCL is installed shall be prepared and compacted in accordance with the project specifications and drawings. The surface shall be smooth, firm, and unyielding, and free of:
 - 1. Vegetation.
 - 2. Construction Debris.
 - 3. Sticks.
 - 4. Sharp rocks and rocks larger than 1 inch.
 - 5. Void spaces.
 - 6. Ice.
 - 7. Abrupt elevation changes.
 - 8. Standing water.
 - 9. Cracks larger than one-quarter inch (6 mm) in width.
 - 10. Any other foreign matter that could contact the GCL.
- B. The surface on which the GCL is to be placed shall consist of, at a minimum, a 6-inch layer of in-situ soil or select fill compacted to 90% of the maximum dry density as determined by the standard Proctor procedure, ASTM D698.
- C. Immediately prior to GCL deployment, the subgrade shall be final-graded to fill in all voids or cracks and then smooth-rolled to provide the best practicable surface for the GCL. At completion of this activity, no wheel ruts, footprints or other irregularities shall exist in the subgrade. Furthermore, all protrusions extending more than one-half inch (12 mm) from the surface shall either be removed, crushed or pushed into the surface with a smooth-drum compactor.
- D. On a continuing basis, the project CQA inspector shall certify acceptance of the subgrade before GCL placement.
- E. It shall be the Installer's responsibility thereafter to indicate to the Engineer any change in the condition of the subgrade that could cause the subgrade to be out of compliance with any of the requirements listed in this Section.
- F. At the top of sloped areas of the job site, an anchor trench for the GCL shall be excavated or an equivalent runout shall be utilized in accordance with the project plans and specifications and as

approved by the CQA Inspector. When utilizing an anchor trench design, the trench shall be excavated and approved by the CQA Inspector prior to GCL placement. No loose soil shall be allowed at the bottom of the trench and no sharp corners or protrusions shall exist anywhere within the trench.

3.4 GCL PLACEMENT

- A. GCL rolls should be delivered to the working area of the site in their original packaging. Immediately prior to deployment, the packaging should be carefully removed without damaging the GCL. The orientation of the GCL (i.e., which side faces up) should be in accordance with the Engineer's recommendations.
- B. Equipment which could damage the GCL shall not be allowed to travel directly on it. If the installation equipment causes rutting of the subgrade, the subgrade must be restored to its originally accepted condition before placement continues.
- C. Care must be taken to minimize the extent to which the GCL is dragged across the subgrade in order to avoid damage to the bottom surface of the GCL. A temporary geosynthetic subgrade covering commonly known as a slip sheet or rub sheet may be used to reduce friction damage during placement.
- D. Materials will not be deployed when moisture, high winds, or other adverse weather conditions are expected. Temporary sandbags are to be used to prevent material uplift and movement from light winds during liner installation.
- E. Material on slopes greater than 10:1 is to be placed parallel to the direction of the slope. Other than roll end (butt) seams, no horizontal seams are allowed on slopes. Transition seams between material on the slopes and material on the bottom of the cell are to be located a minimum of two feet from the bottom of the slope
- F. All GCL panels should lie flat on the underlying surface, with no wrinkles or fold, especially at the exposed edges of the panels. Excessive wrinkles are to be removed from the material after deployment.
- G. Only as much GCL shall be deployed as can be covered at the end of the working day with soil, a geomembrane, or a temporary waterproof tarpaulin. The GCL shall not be left uncovered overnight. If the GCL is hydrated when no confining stress is present, it will likely be necessary to remove and replace the hydrated material. The project Engineer, CQA inspector, and GCL supplier should be consulted for specific guidance if premature hydration occurs.

3.5 ANCHORAGE

- A. As directed by the project drawings and specifications, the end of the GCL roll shall be placed in an anchor trench at the top of the slope or an equivalent runout design shall be utilized. When utilizing an anchor trench design, the front edge of the trench should be rounded so as to eliminate any sharp corners. Loose soil should be removed from the floor of the trench. The GCL should cover the entire trench floor but does not extend up the rear trench wall.

3.6 SEAMING

- A. The GCL seams are constructed by overlapping their adjacent edges. Care should be taken to ensure that the overlap zone is not contaminated with loose soil or other debris.
- B. The minimum dimension of the longitudinal overlap should be 6 inches (150 mm). If the GCL is manufactured with a grooved cut in the nonwoven geotextile that allows bentonite to freely extrude into the longitudinal overlap, then no supplemental bentonite is required for this overlap.

If the GCL does not have a grooved cut in the nonwoven geotextile longitudinal overlap, then bentonite-enhanced seams are required as described below.

- C. End-of-roll overlapped seams should be constructed with a minimum overlap of 12 inches (600 mm). Seams at the ends of the panels should be constructed such that they are shingled in the direction of the grade to prevent the potential for runoff flow to enter the overlap zone. End-of-roll overlapped seams for all reinforced GCL seams require bentonite-enhanced seams as described below.
- D. Bentonite-enhanced seams are constructed between the overlapping adjacent panels as follows. The underlying edge of the longitudinal overlap is exposed and then a continuous bead of granular sodium bentonite is applied along a zone defined by the edge of the underlying panel and the 6-inch (150-mm) line. The granular bentonite shall be applied at a minimum application rate of one quarter pound per lineal foot (0.4 kg/m). A similar bead of granular sodium bentonite is applied at the end-of-roll overlap.

3.7 DETAIL WORK

- A. The GCL shall be sealed around penetrations and embedded structures embedded in accordance with the design drawings and the GCL Manufacturer.
- B. Cutting the GCL should be performed using a sharp utility knife. Frequent blade changes are recommended to avoid damage to the geotextile components of the GCL during the cutting process.

3.8 DAMAGE REPAIR

- A. If the GCL is damaged (torn, punctured, perforated, etc.) during installation, it may be possible to repair it by cutting a patch to fit over the damaged area. The patch shall be obtained from a new GCL roll and shall be cut to size such that a minimum overlap of 12 inches (300 mm) is achieved around all of the damaged area. Granular bentonite or bentonite mastic should be applied around the damaged area prior to placement of the patch. It may be desirable to use an adhesive to affix the patch in place so that it is not displaced during cover placement.

3.9 COVER PLACEMENT

- A. Although direct vehicular contact with the GCL is to be avoided, lightweight, low ground pressure vehicles (such as 4-wheel all-terrain vehicles) may be used to facilitate the installation of any geosynthetic material placed over the GCL. The GCL supplier or CQA engineer should be contacted with specific recommendations on the appropriate procedures in this situation.
- B. When a textured geomembrane is installed over the GCL, a temporary geosynthetic covering known as a slip sheet or rub sheet should be used to minimize friction during placement and to allow the textured geomembrane to be more easily moved into its final position.
- C. Cyclical wetting and drying of GCL covered only with geomembrane can cause overlap separation. Soil cover should be placed promptly whenever possible. Geomembranes should be covered with a white geotextile and/or operations layer without delay to minimize the intensity of wet-dry cycling. If there is the potential for unconfined cyclic wetting and drying over an extended period of time, the longitudinal seam overlaps should be increased based on the project engineer's recommendations.
- D. To avoid seam separation, the GCL should not be put in excessive tension by the weight or expansion of textured geomembrane on steep slopes. The project Engineer should be consulted about the potential for GCL tension to develop.

END OF SECTION

SECTION 31 05 19.16 – POLYETHYLENE GEOMEMBRANE LINER

PART 1 GENERAL

1.1 SUMMARY

- A. Specifications and guidelines for manufacturing and installing geomembrane liners.
- B. Related Sections:
 - 1. Section 31 05 19.13 - Geotextile Fabric.
 - 2. Section 31 05 19.15 - Geosynthetic Clay Liner.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Polyethylene Geomembrane Liner:
 - 1. Basis of Measurement: Square Feet.
 - 2. Basis of Payment: Measurement for payment will be based on the actual plan view area of geomembrane installed as measured by survey. Measurement will be from the inside edge of the anchor trench or the seam along the tie-in to existing Cell 4B and the western edge (future Cell 6) of the cell where the geomembrane terminates in the liner termination berm. The cost for material not included in the measured pay quantity (overlap, waste, material in anchor trench, etc.) must be included in the unit price.

1.3. REFERENCE

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D1004 - Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 - 2. ASTM D1238 - Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
 - 3. ASTM D1505 - Test Method for Density of Plastics by the Density-Gradient Technique.
 - 4. ASTM D1603 - Test Method for Carbon Black in Olefin Plastics.
 - 5. ASTM D3895 - Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry.
 - 6. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
 - 7. ASTM D5199 - Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.
 - 8. ASTM D5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.
 - 9. ASTM D5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.
 - 10. ASTM D5994 - Standard Test Method for Measuring Core Thickness of Textured Geomembranes.
 - 11. ASTM D6392 - Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
 - 12. ASTM D6693 - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.

- B. Geosynthetic Research Institute (GRI)
 - 1. GRI GM 13 Test Properties - Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes.
 - 2. GRI GM 17 Test Properties - Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes.

1.4 DEFINITIONS

- A. Lot - A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.
- B. Construction Quality Assurance Consultant (Consultant) - Party, independent from Manufacturer and Contractor that is responsible for observing and documenting activities related to quality assurance during the lining system construction.
- C. Engineer - The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.
- D. Geomembrane Manufacturer (Manufacturer) - The party responsible for manufacturing the geomembrane rolls.
- E. Geosynthetic Quality Assurance Laboratory (Testing Laboratory) - Party, independent from the Owner, Manufacturer and Installer, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the Owner.
- F. Installer - Party responsible for field handling, transporting, storing, deploying, seaming and testing of the geomembrane seams. For the sake of the present Contract Documents, reference to Installer throughout this specification shall be understood to be one and the same as Contractor, whether the Contractor subcontracts the installation or not.
- G. Panel - Unit area of a geomembrane that will be seamed in the field that is larger than 100 ft².
- H. Patch - Unit area of a geomembrane that will be seamed in the field that is less than 100 ft².
- I. Subgrade Surface - Soil layer surface that immediately underlies the geosynthetic material(s).

1.5 SUBMITTALS POST-AWARD

- A. Furnish the following product data, in writing, to Engineer prior to shipment of the geomembrane material:
 - 1. Information required for Manufacturer prequalification including but not limited to:
 - a. Manufacturer's capabilities
 - b. Manufacturer's quality control manual
 - c. Manufacturer's field installation Quality Control Manual
 - 2. Resin Data shall include the following:
 - a. Certification stating that the resin meets the specification requirements (see Section 2.1C).
 - b. A copy of the quality control certificates issued by the resin supplier noting results of density and melt flow index

3. Geomembrane Roll:
 - a. Statement certifying no recycled polymer and no more than 2% rework of the same type of material is added to the resin (product run may be recycled).
 - b. Reports on the tests conducted by the Manufacturer to verify the quality of the resin used to manufacture the geomembrane rolls assigned to this facility
 - c. Reports on the tests conducted by the Manufacturer to certify the quality of the liner sheets.
- B. The Contractor shall furnish the following information to the Engineer prior to delivery and installation:
 1. One quality control certificate for every roll
 2. Installation layout drawings:
 - a. Must show proposed panel layout including field seams and details.
 - b. Must be approved prior to installing the geomembrane
 - i. Approved drawings will be for concept only and actual panel placement will be determined by site conditions.
 3. Installer's Geomembrane Field Installation Quality Assurance Plan.
- C. Prior to Installation, geomembrane conformance sampling will be performed at the stated frequencies as presented in Table 2 in the CQA Plan. If possible, the conformance sampling shall be performed by the Geosynthetic Manufacturer at the plant prior to shipping to the site. Samples may also be selected from geomembrane rolls delivered to the site for offsite conformance testing by a geosynthetics testing laboratory other than the Geosynthetic Manufacturer.
- D. During installation, per the CQAP, documentation files for field quality control shall be maintained by the Contractor and daily logs shall be submitted at the end of each week after being updated and checked to the Certifying Engineer or Engineer's representative.
- E. The Contractor will submit the following to the Engineer upon completion of installation:
 1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents.
 2. Material and installation warranties.
 3. As-built drawings showing actual geomembrane placement and seams including typical anchor trench detail.

1.6 QUALITY ASSURANCE

- A. The Owner may engage and pay for the services of a Geosynthetic Quality Assurance Consultant and Laboratory to monitor geomembrane installation.
- B. Manufacturing Quality Control Sampling:
 1. Sampling shall be in accordance with the specific test methods listed in Table 3. If no sampling protocol is stipulated in the particular test method, then test specimens shall be taken evenly spaced across the entire roll width.
 2. The number of tests shall be in accordance with the appropriate test methods listed in Table 3.
 3. The average of the test results should be calculated per the particular standard cited and compared to the minimum value listed in these tables, hence the values listed are the minimum average values.
- C. Manufacturing Quality Control Retest and Rejection:

1. If the results of any test do not conform to the requirements of this specification, retesting to determine conformance or rejection should be done in accordance with the manufacturing protocol as set forth in the Manufacturer's quality manual.

1.7 QUALIFICATIONS

- A. Manufacturer:
 1. Manufacturer shall have manufactured a minimum of 5,000,000 square feet of polyethylene geomembrane during the last year.
- B. Installer:
 1. Installer shall have worked in a similar capacity on at least three (3) projects similar in complexity to the project described in the Contract Documents.
 2. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents within the past three (3) years.
 3. The Installer shall provide a minimum of one Master Seamer for work on the project.
 - a. Must have completed a minimum of 2,000,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for the use on this Project.

1.8 MATERIAL LABELING, DELIVER, STORAGE AND HANDLING

- A. Labeling - Each roll of geomembrane delivered to the site shall be labeled by the Manufacturer. The label will identify:
 1. Manufacturer's name.
 2. Product identification.
 3. Thickness.
 4. Length.
 5. Width.
 6. Roll number.
- B. Packaging - The geomembrane shall be rolled onto a substantial core or core segments and held firm by dedicated straps/slings, or other suitable means.
- C. Delivery - Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.
- D. Storage - The on-site storage location for geomembrane material, provided by the Contractor to protect the geomembrane from punctures, abrasions and excessive dirt and moisture for should have the following characteristics:
 1. Level (no wooden pallets).
 2. Smooth and dry.
 3. Protected from theft and vandalism.
 4. Adjacent to the area being lined.
- E. HDPE rolls are to be unloaded under the supervision of the liner Installer using straps or other devices that will prevent damage to the liner material.
- F. Rolls should be stored on subgrade that is clean, dry, and well compacted. HDPE materials shall be stacked not more than two rolls high.
- G. If any material damage is noted during unloading, the damaged areas are to be marked with a permanent marker, and a notation made as to the roll number, location of damage, and type of damage. Recording of minor damage to the outer wraps of liner material is not required.
- H. Handling - Materials are to be handled so as to prevent damage.

1.9 WARRANTY

- A. Material shall be warranted for a period of 1 year from the date of geomembrane installation.
- B. Installation shall be warranted against defects in workmanship for a period of 1 year from the date of geomembrane completion.

PART 2 PRODUCTS

2.1 GEOMEMBRANE

- A. Manufacturer:
 - 1. Geomembrane shall be manufactured by the following:
 - a. AgruAmerica; or
 - b. Approved equal.
- B. Material shall be smooth or textured polyethylene geomembrane as shown on the Drawings. Smooth liner shall be installed at the bottom of the pond and textured liner on the walls of the pond with textured side facing up.
- C. Resin:
 - 1. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane.
 - 2. Natural resin (without carbon black) shall meet the following minimum requirements:
 - a. Density: 0.93 g/cm³ as determined by ASTM D 1505
 - b. Melt Flow Index: ≤ 1.0 g/10 min. as determined by ASTM D 1238
 - c. OIT: ≥ 100 minutes (1 atm/200°C) as determined by ASTM D 3895
- D. Geomembrane Rolls:
 - 1. Do not exceed a combined maximum total of 2 percent by weight of additives other than carbon black.
 - 2. Geomembrane shall be free of holes, pinholes as verified by on-line electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.
 - 3. Geomembrane material is to be supplied in roll form. Each roll is to be identified with labels indicating roll number, thickness, length, width and Manufacturer.
 - 4. All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in section 1.09, B, and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified and indicated during manufacturing, these pinholes may be corrected during installation.
- E. Smooth surfaced geomembrane shall meet the requirements shown in the following table for the following material:
 - 1. Table 3 for black HDPE with thickness (minimum average) mil of 60, and lowest individual reading (-10%) of 54 (1.40), and all other related characteristics as identified in the table under the corresponding column.
- F. Textured geomembrane shall meet the requirements shown in the following table for the following material:
 - 1. Table 3 for black coextruded textured HDPE, or approved equal, with thickness (minimum average) mil of 54, and lowest individual readings, and all other related characteristics as identified in the table under the corresponding column.
- G. Extrudate Rod or Bead:
 - 1. Extrudate material shall be made from same type resin as the geomembrane.

2. Additives shall be thoroughly dispersed.
3. Materials shall be free of contamination by moisture or foreign matter.

2.2 EQUIPMENT

- A. Welding equipment and accessories shall meet the following requirements:
 1. Gauges showing temperatures in apparatus (extrusion welder) or wedge (wedge welder) shall be present.
 2. An adequate number of welding apparatuses shall be available to avoid delaying work.
 3. Power source must be capable of providing constant voltage under combined line load.

PART 3 EXECUTION

3.1 GENERAL

- A. Section 01 00 00 - Quality Requirements: Examination of existing conditions before starting work.

3.2 DEPLOYMENT

- A. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.
- B. If a Liner Installation Plan has been submitted, the geomembrane shall be installed in accordance with said Plan. The panel layout may be adjusted in the field if required by site conditions. Panels are to be identified with a Panel Number that allows ready identification of the location of the panel. The Panel Number is to be written on the liner material with a permanent marker.
- C. Prior to placement of any liner materials, the subgrade is to be inspected and approved by the Engineer. Any areas found to be unacceptable are to be corrected prior to placement of liner material. Documentation of this inspection is to be provided if required by the project specifications.
- D. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.
- E. Materials will not be deployed when moisture, high winds, or other adverse weather conditions are expected.
- F. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:
 1. HDPE materials are to be deployed using methods that will not crimp, bend, or otherwise damage the material, nor damage the underlying surface. Unless otherwise approved, HDPE materials are to be deployed using a "spreader bar" manufactured especially for this purpose.
 2. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.
 3. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.
 4. No motorized equipment will be allowed to operate directly over the geomembrane material. Portable equipment (portable generators, compressors, etc.) will be mounted on rubber tires (less than 6 psi) or placed on a sacrificial sheet of material.
 5. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.
- G. The liner panels shall be oriented at right angles to the toe of the berm (downslope) where possible. Except for roll end (butt) seams, horizontal seams are not allowed on slopes steeper

than 8:1. Transition seams between vertical slope panels (textured material) and horizontal panels (smooth material) will be located at least 10 feet from the toe of the slope. Liner panels are to be deployed in a manner that minimizes field seams.

- H. HDPE liner materials are to be deployed in a manner that minimizes wrinkling but allows for sufficient material slack to properly conform to the subgrade and allow for thermal expansion and contraction of the material. Ambient weather conditions and liner temperature are to be considered when making this determination.
- I. When HDPE materials are deployed at temperatures greater than 80° F and in direct sunlight, the material will be allowed to stabilize overnight before the anchor trenches are backfilled. Stabilizing is accomplished using the following techniques:
 - 1. Leave sufficient excess liner material on the outboard side of the anchor trench to allow for anticipated liner shrinkage.
 - 2. Temporarily weight the liner in the anchor trench using sandbags.
 - 3. Place sufficient sandbags at the toe of the slope to allow the liner to pull the excess material from the anchor trench as it shrinks. The number and placement of sandbags will vary according to the pond design and expected weather conditions.
 - 4. Inspect the liner material while the material is still cool the following morning. If sufficient liner shrinkage has occurred, the anchor trench is to be backfilled.

3.3 FIELD SEAMING

- A. Seams shall meet the following requirements:
 - 1. To the maximum extent possible, orient seams parallel to line of slope, i.e., down and not across slope.
 - 2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.
 - 3. Slope seams (panels) shall extend a minimum of five-feet beyond the grade break into the flat area.
 - 4. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the Engineer and Installer.
 - 5. Align seam overlaps consistent with the requirements of the welding equipment being used. Unless otherwise specified below, a minimum 4-inch overlap is required.
- B. During Welding Operations:
 - 1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.
- C. Extrusion Welding:
 - 1. Extrusion welding is to be used for detail work, repairs, and in other areas where wedge welding cannot be used.
 - 2. The extrusion welder shall be purged prior to beginning a seam until all potentially heat-degraded extrudate has been removed from the barrel.
 - 3. Areas to be extrusion welded are to be clean and dry. Surface oxidation is to be removed by grinding. Grinding is to be done not more than one hour prior to the time the extrusion weld is made, using the procedures listed below:
 - a. The grinding shall not extend more than ¼ inch beyond the limit of the extrudate after seam completion.
 - b. Grinding shall be performed preferentially in a perpendicular path across the seam.
 - c. The depth of grinding shall be less than 10 percent of the sheet thickness.

- d. All shavings produced from grinding shall be removed from the seaming area prior to welding.
 4. Where patches are required, the patches are to be round or oval in shape and are to overlap the damaged area by a minimum of 4" on all sides. Patches are to be heat sealed to the main liner prior to extrusion welding to prevent the edge of the patch from lifting when the extrudate is applied.
 5. Extrusion welds are to be tested by use of a vacuum box.
- D. Hot Wedge Welding:
1. After allowing the liner temperature to stabilize, overlap adjacent panels a minimum of 4". Remove any excessive wrinkles prior to seaming.
 2. Field seams are to be made using the dual-hot-wedge welding method whenever possible.
 3. The area to be seamed is to be clean and dry. If required, a protective layer is to be placed under the seam to prevent dust or moisture from entering the seam area, and/or the liner material in the seam area is to be wiped with a clean rag.
 4. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.
 5. At the start of each seam, the machine operator is to mark the date, time, machine number, machine temperature, machine speed, and operator initials on the lining material with a permanent marker. This information is to be recorded in the project log.
 6. The machine operator is responsible for ensuring that the area to be seamed is clean and dry. If any questionable seam areas are noted, the operator is to mark these areas for later inspection and testing.
 7. The machine operator is to read the machine temperature at intervals of approximately 100'. This procedure will ensure that seams are made at the proper temperature. If an excessively high or low temperature reading is noted, the operator is to stop seaming and mark the affected area for testing. The cause of the problem is to be located and corrected, and a new trial seam made and tested before seaming resumes.
- E. Trial Welds:
1. Prior to seaming any materials, perform trial welds on geomembrane samples to verify welding equipment is operating properly.
 2. Make trial welds under the same surface and environmental conditions as the production welds, i.e., in contact with subgrade and similar ambient temperature.
 3. Trial seams are to be conducted immediately prior to the start of any welding period, if the welding equipment has been shut down for a period of more than (10) minutes, at mid shift, and if a substantial change in weather conditions occurs. A trial seam is to be done for each piece of welding equipment to be used during a welding period.
 4. Cut six 1-inch wide test strips from the trial weld.
 5. Quantitatively test specimens for peel adhesion, and then for shear strength using a field tensiometer calibrated within 90 days of the start of work. Installer shall provide to CQAE a calibration certificate prior to work commencing.
 6. At least (3) peel and (3) shear tests are to be conducted on each trial seam. Trial weld specimens shall pass when the results shown in Table 3 are achieved in both peel and shear test.
 - a. The break, when peel testing, occurs in the liner material itself, not through peel separation (Film Tear Bond or FTB).
 - b. The break is ductile.

7. Upon completion of a successful test, the date, time, seamer name, wedge welding machine number, machine temperature setting, machine speed setting, and test results are to be recorded in the Trial Seam Log. No seaming is to be done until a successful test seam has been completed and recorded.
 8. If a trial seam fails the test, the entire process will be repeated. If the same welding machine and seamer fail the testing a second time, the welding machine and the seamer will not be used for seaming until the deficiencies are corrected and two consecutive successful trial seams are complete.
 9. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed and recorded trial weld.
- F. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. Installer shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.
- G. Defects and Repairs
1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.
 2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.

3.4 FIELD QUALITY ASSURANCE

- A. Manufacturer and Installer shall participate in and conform to all terms and requirements of the Owner's quality assurance program. Contractor shall be responsible for assuring this participation.
- B. Quality assurance requirements are as specified in this Section and in the Field Installation Quality Assurance Manual if it is included in the contract.
- C. Field Testing:
1. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.
 - a. Vacuum Testing shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
 - b. Air Pressure Testing shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.
 - c. Other approved methods.
 2. Destructive Testing (performed by Installer).
 - a. Location and Frequency of Testing.
 - i. Collect destructive test samples at a frequency of one per every 500 linear feet of seam length.
 - ii. Test locations will be determined after seaming.
 - iii. Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute, www.geosynthetic-institute.org) to minimize test samples taken.
 - b. Sampling Procedures are performed as follows:
 - i. Installer shall cut samples at locations designated by the Engineer as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.
 - ii. Installer will number each sample, and the location will be noted on the installation as-built.

- iii. Samples shall be twelve (12) inches wide by minimal length with the seam centered lengthwise.
 - iv. Cut a 2-inch wide strip from each end of the sample for field-testing.
 - v. Cut the remaining sample into two parts for distribution as follows:
 - a) One portion for Installer, 12-inches by 12 inches.
 - b) One portion for the Third-Party laboratory, 12-inches by 12-inches.
 - c) One portion to the Engineer for archive storage, 12 inches by 12 inches.
 - d) Additional samples may be archived if required.
 - vi. Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determining the Integrity of Non-Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
 - vii. Installer shall repair all holes in the geomembrane resulting from destructive sampling.
 - viii. Repair and test the continuity of the repair in accordance with these Specifications.
3. Failed Seam Procedures.
- a. If the seam fails, Installer shall follow one of two options:
 - i. Reconstruct the seam between any two passed test locations.
 - ii. Trace the weld to intermediate location at least 10 feet minimum or where the seam ends in both directions from the location of the failed test.
 - b. The next seam welded using the same welding device is required to obtain an additional sample, i.e., if one side of the seam is less than 10 feet long.
 - c. If sample passes, then the seam shall be reconstructed or capped between the test sample locations.
 - d. If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

3.5 REPAIR PROCEDURES

- A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.
- B. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.
- C. Installer shall be responsible for repair of defective areas.
- D. Agreement upon the appropriate repair method shall be decided between Engineer and Installer by using one of the following repair methods:
 - 1. Patching - Used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.
 - 2. Spot Welding - Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.
 - 3. Capping - Used to repair long lengths of failed seams.
 - 4. Remove the unacceptable seam and replace with new material.
- E. The following procedures shall be observed when a repair method is used:
 - 1. All geomembrane surfaces shall be clean and dry at the time of repair.
 - 2. Surfaces of the polyethylene which are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.
 - 3. Extend patches or caps at least 4-inches beyond the edge of the defect, and around all corners of patch material.

F. Repair Verification:

1. Number and log each patch repair (performed by Installer).
2. Non-destructively test each repair using methods specified in this Specification.

Table 3 Material Properties – Textured/Smooth 60mil HDPE Geomembrane

Property	Test Method	Required Value - Textured	Required Value - Smooth	Minimum Test Frequency
Geomembrane Manufacturer Quality Assurance Testing				
Melt Flow Index (g/10 min)	ASTM D 1238	≤ 1.0	≤ 1.0	1/100,000 ft ² min. 1 per resin batch
Resin Density (gm/cm ³)	ASTM D 1505	≥ 0.93	≥ 0.93	1/100,000 ft ² min. 1 per resin batch
Thickness (mil) Lowest individual of 10 readings (mil)	ASTM D 5994/5199 (as modified in Annex A)	60 54	60 54	Per roll
Asperity Height (mil)	ASTM D 7466	16	NA	2 nd roll
Sheet Density (gm/cm ³)	ASTM D1505/D792	≥ 0.940	≥ 0.940	200,000 lb
Tensile Properties (each direction) <ul style="list-style-type: none"> • Strength at Break (lb/in-width) • Strength at Yield (lb/in-width) • Elongation at Break (%) • Elongation at Yield (%) 	ASTM D 6693, Type IV, 2 ipm	90 126 100 12	228 126 700 12	20,000 lb
Tear Resistance	ASTM D 1004	min. 42 lbs	min. 42 lbs	45,000 lb
Puncture Resistance	ASTM D 4833	min. 90 lbs	min. 108 lbs	45,000 lb
Stress Crack Resistance	ASTM D 5397	500 hr	500 hr	Per GRI-GM10
Carbon Black Content	ASTM D 4218	2.0-3.0%	2.0-3.0%	20,000 lb
Carbon Black Dispersion	ASTM D 5596	Only near spherical agglomerates, 10 views in cat. 1 or 2	Only near spherical agglomerates, 10 views in cat. 1 or 2	45,000 lb
Oxidative Induction Time (OIT)	ASTM D 3895	≥ 100 mins	≥ 100 mins	200,000 lb
Oven Aging at 85°C	ASTM D 5885	80%	80%	Per formulation
UV Resistance percent retained after 1,600 hours	ASTM D 5885	50%	50%	Per formulation

Property	Test Method	Required Value - Textured	Required Value - Smooth	Minimum Test Frequency
Geomembrane Manufacturer Conformance Testing				
Sampling of Geosynthetics for Testing	ASTM D4354	--	--	--
Thickness (mil) Lowest individual of 10 readings (mil)	ASTM D 5199 (as modified in Annex A)	60 54	60 54	1/100,000 ft ²
Sheet Density (gm/cm ³)	ASTM D1505/D792	≥ 0.940	≥ 0.940	1/100,000 ft ²
Tensile Properties (each direction) <ul style="list-style-type: none"> Strength at Break (lb/in-width) Strength at Yield (lb/in-width) Elongation at Break (%) Elongation at Yield (%) 	ASTM D 6693, Type IV, 2 ipm	90 126 100 12	228 126 700 12	1/100,000 ft ²
Tear Resistance	ASTM D 1004	min. 42 lbs	min. 42 lbs	1/100,000 ft ²
Carbon Black Content	ASTM D 4218	2.0-3.0%	2.0-3.0%	1/100,000 ft ²
Carbon Black Dispersion	ASTM D 5596	Only near spherical agglomerates, 10 views in cat. 1 or 2	Only near spherical agglomerates, 10 views in cat. 1 or 2	1/100,000 ft ²
Puncture Resistance	ASTM D 4833	min. 90 lbs	min. 108 lbs	1/100,000 ft ²
Asperity Height (mil)	ASTM D 7466	16	NA	1/100,000 ft ²
Construction Quality Assurance Testing				
Thickness (mil) Lowest individual of 10 readings (mils)	ASTM D 5199 (as modified in Annex A)	60 54	60 54	Per roll
HDPE Peel Strength (ppi) ^(1,2)	ASTM D 6392 ^(3,4)	95 (fusion) 78 (extrusion)	95 (fusion) 78 (extrusion)	1 per 500 lineal feet of welded seam
HDPE Shear Strength (ppi) ^(1,2)	ASTM D 6392 ^(3,4)	120	120	
Peel Separation (%) ^(1,2)	ASTM D 6392 ^(3,4)	< 10%	< 10%	

- Maximum of one (1) non-FTB (Film Tear Bond) per five (5) specimens tested is acceptable provided that strength requirements are met on that sample. Film Tear Bond (FTB) definition: A failure to the ductile mode of one of the bonded sheets by tearing prior to complete separation to the bonded area. Examples of FTB and the associated locus of break codes are provided in ASTM D 6392.
- For dual-track seams, both tracks will be tested for compliance with the minimum property values listed above.
- Destructive seams will be evaluated for strength parameters according to ASTM D 6392, excluding Section 6.3 "Conditioning." Destructive seams will be evaluated for elongation during cold weather seaming. The Geosynthetic Installer is required to submit a cold weather seaming plan for approval along with recommendations in GRI publication GRI GM 9 or superseding GRI guidance document.
- As modified by NSF 54.
- If an electronic leak location survey is completed, the destructive seam sampling frequency will be increased from 500 feet to 1,000 feet.

END OF SECTION

SECTION 31 10 00 – SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing designated paving, curbs, and other obstructions.
 - 3. Removing designated trees, shrubs, and other plant life.
 - 4. Removing abandoned utilities.
 - 5. Excavating topsoil.
- B. Related Sections:
 - 1. Section 31 22 13 - Rough Grading.

1.2 QUALITY ASSURANCE

- A. Perform Work in accordance with the most recent edition of the New Mexico Standard Specifications for Public Works Construction, with latest revisions.
- B. Perform Work in accordance with the most recent edition of the NMDOT Standard Specifications for Road and Bridge Construction, with latest revisions.
- C. Conform to applicable State of New Mexico code for environmental requirements, disposal of debris, burning debris on site, use of herbicides.

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

- A. Site Clearing
 - 1. Basis of Measurement: Square Feet.
 - 2. Basis of Payment: Payment is based on area in Plans that need to be cleared.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 00 00 - Quality Requirements: Examination of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify waste area and/or salvage area for placing removed materials.

3.2 PREPARATION

- A. Call New Mexico “One Call” at 811 and local utility companies at least three (3) days before performing Work.
 - 1. Request that underground utilities be located and marked within and surrounding construction areas.

3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.4 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs within indicated areas. Remove stumps and surface rock.
- C. Clear undergrowth and deadwood, without disturbing subsoil.

3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Continuously clean up and remove waste materials from site. Do not allow materials to accumulate on site.
- C. The Engineer will indicate to the Contractor which obstructions are to be removed, disposed of, or salvaged, and will require special documentation.
- D. Do not burn or bury materials on site. Leave site in clean condition.

3.6 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on impervious material and cover over with same material, until disposal.
- D. Remove excess topsoil not intended for reuse, from site.
- E. All equipment shall be properly maintained and with proper safety devices.
- F. Contractor must maintain control of dust and minimize blowing debris.
- G. All equipment shall be operated as to not interfere with the operation of the landfill or patrons.

END OF SECTION

SECTION 31 22 13 – ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating subsoil.
 - 2. Cutting, grading, filling, rough contouring, and compacting site for liners.
 - 3. Potential Waste Excavation – Refer to Waste Excavation Plan, Taos Regional Landfill, September 11, 2015.
- B. Related Sections:
 - 1. Section 31 10 00 - Site Clearing: Excavating topsoil.
 - 2. Section 31 23 23 - Backfill: General building area backfilling.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Rough Grading
 - 1. Basis of Measurement: Cubic Yards
 - 2. Basis of Payment: Payment will be based on topographic surveys to be completed before and after grading to verify quantity of material cut. No allowances will be made for shrinking or swelling.
- B. Waste Excavation
 - 1. Basis of Measurement: Cubic Yards
 - 2. Basis of Payment: Payment will be based on topographic surveys to be completed before and after grading to verify quantity of material cut. No allowances will be made for shrinking or swelling.

1.3 REFERENCES

- A. Waste Excavation Plan, Taos Regional Landfill, September 11, 2015
- B. Geotechnical Reports:
 - 1. Not Applicable
- C. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- D. American Society for Testing and Materials International (ASTM):
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D422 - Particle -Size Analysis of Soils.
 - 3. ASTM D653 - Terminology Relating to Soil, Rock, and Contained Fluids.
 - 4. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft-lbf/ft³.
 - 5. ASTM D1140 - Amount of Material in Soils Finer than the No. 200 Sieve.
 - 6. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 7. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft-lbf/ft³.
 - 8. ASTM D1633 - Test Method for Compressive Strength of Molded Soil - Cement Cylinders.

9. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
10. ASTM D2216 - Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
11. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
12. ASTM D2434 - Standard Test Method for Permeability of Granular Soils Constant Head.
13. ASTM D2487 - Classifications of Soils for Engineering Purposes (Unified Soil Classification System).
14. ASTM D2488 - Description and Identification of Soils (Visual-Manual Procedure).
15. ASTM D2774 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
16. ASTM D2901 - Test Method for Cement Content of Freshly Mixed Soil Cement.
17. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods Shallow Depth.
18. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods Shallow Depth.
19. ASTM D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
20. ASTM D4254 - Minimum Index Density and Unit Weight of Sols and Calculation of Relative Density.
21. ASTM D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
22. ASTM D4564 - Density of Soil in Place by the Sleeve Method.
23. ASTM D4643 - Determination of Water (Moisture) Content of Soil by the Microwave Oven Heating.
24. ASTM D4718 - Correction of Unit Weight and Water Content for Soils Containing Oversize Particles.
25. ASTM D4832 - Compressive Strength of Controlled Low Strength Material.
26. ASTM D4914 - Density of Soil and Rock in Place by the Sand Replacement Method in a Test Pit.
27. ASTM D4959 - Determination of Water (Moisture) Content of Soil by Direct Heating.
28. ASTM D5030 - Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit.
29. ASTM D5080 - Rapid Determination of Percent Compaction.
30. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

- A. Section 01 00 00 - Submittal Procedures.
- B. Density testing as required for compaction of liner subgrade.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Materials testing as required for gradation and uniformity coefficient of protective soil layer.
- E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 1. Density test results and locations.

2. Final grade topographic survey prior to placement of liner

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C136, ASTM D2419, and ASTM D2434.
- B. Perform Work in accordance with applicable New Mexico State Standards.

PART 2 PRODUCTS

2.1 MATERIALS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 00 00 - Quality Requirements: Examination of existing conditions before starting work.
- B. Verify survey benchmark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call New Mexico "One Call" at 811 and local utility companies at least three (3) days before performing Work.
 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company to remove and relocate utilities.
- D. Protect remaining utilities from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, relandscaped, or regraded.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. Remove excess subsoil not intended for reuse, from site.
- D. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.
- F. Notify Owner of any utility damage at once so emergency measures can be taken. The Contractor will pay for any required repairs.
- G. Intercept and divert surface drainage and precipitation away from excavation through use of dikes, curb walls, ditches, pipes, or other means.
- H. Remove and exclude water, including storm water, groundwater, irrigation water, and/or other waters, from all excavations. Dewatering wells, well-points, sump pumps, or other means shall be used to remove water and continuously maintain groundwater at a level below the bottom of

excavations. Water shall be removed and excluded until backfilling is complete and all field soils testing have been completed.

- I. Comply with New Mexico state standards and requirements for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control.
- J. Excavation below Fills and Embankments: The subgrade areas beneath embankments shall be excavated to remove not less than the top 1 foot of native material and, where such sub-grade is sloped, the native material shall be benched. After the required excavation or over-excavation has been completed, the top 12 inches of material shall be scarified and moisture added or material dried to optimum moisture and the exposed surface shall be proof rolled.
- K. Material beyond prescribed lines which is loosened by the Contractor's operations shall be removed, replaced and/or compacted, as directed by the Engineer, at no additional cost to the Owner.

3.4 FILLING

- A. See Section 31 23 23 - Backfill.

3.5 DISPOSAL OF EXCAVATED MATERIALS

- A. Excess excavated material or excavated material not suitable for backfill may be disposed of on-site, provided that:
 - 1. The finished grade substantially conforms with the Drawings, or any deviation therefrom is approved by the Engineer.
 - a. Blend with natural terrain.
 - b. Minimum slope: 2%.
 - c. Maximum slope: 4:1.
 - 2. All excess excavated material spread on the right-of-way is compacted to the same specifications as final backfill, as set for in Section 31 23 23 - Backfill and the Drawings, and
 - 3. All on-site disposal of material is approved by the Engineer.
- B. Do not dispose of waste material by dumping from tops of slopes.
- C. Do not dispose of excess material within 15 feet of any wash, drainage or waterway.

3.6 TOLERANCES

- A. Section 01 00 00 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Vertical measurements shall be read to the nearest 0.01 foot to establish elevations at a minimum precision of 0.1 foot. Horizontal measurements shall be read to the nearest 0.1 foot to establish locations at a minimum precision of 0.5 foot.

3.7 FIELD QUALITY CONTROL

- A. Section 01 00 00 - Execution Requirements: Testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with ASTM D1557, ASTM D698, AASHTO T180.
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D6938.
 - 2. Moisture Tests: ASTM D6938.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

- E. Compaction testing shall be done to the extent such that the Owner and Engineer can be reasonably assured that the backfill has been placed in accordance with the requirements of the Contract Documents or in accordance with the NMDOT Standard Specifications for Road and Bridge Construction, whichever is the more stringent. When a testing allowance is established on the Bid Form, the Owner and Engineer will determine the testing frequency to be used throughout the project.

END OF SECTION

SECTION 31 23 17 - TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for leachate collection system.
 - 2. Backfilling and compaction.
- B. Related Sections:
 - 1. Section 03 05 00 - Basic Concrete Materials and Methods: Concrete materials.
 - 2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
 - 3. Section 31 23 23 - Backfill: General Backfilling.
 - 4. Section 33 47 28 - PVC Leachate Pipe.

1.2 REFERENCES

- A. Geotechnical Report:
 - 1. Soil testing performed by ACS Laboratory & Field Testing Services, Bernalillo NM 87004 on April 23, 2014.
- B. New Mexico Standard Specifications for Public Works Construction (NMSSPWC):
 - 1. NMSSPWC Sections 701, 801 & 802 "Trenching, Excavation and Backfill".
- C. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- D. American Society for Testing and Materials International (ASTM):
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D422 - Particle -Size Analysis of Soils.
 - 3. ASTM D653 - Terminology Relating to Soil, Rock, and Contained Fluids.
 - 4. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - 5. ASTM D1140 - Amount of Material in Soils Finer than the No. 200 Sieve.
 - 6. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 7. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³).
 - 8. ASTM D1633 - Test Method for Compressive Strength of Molded Soil - Cement Cylinders.
 - 9. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 10. ASTM D2216 - Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
 - 11. ASTM D2487 - Classifications of Soils for Engineering Purposes (Unified Soil Classification System).
 - 12. ASTM D2488 - Description and Identification of Soils (Visual-Manual Procedure).
 - 13. ASTM D2774 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
 - 14. ASTM D2901 - Test Method for Cement Content of Freshly Mixed Soil Cement.

15. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
16. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
17. ASTM D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
18. ASTM D4254 - Minimum Index Density and Unit Weight of Sols and Calculation of Relative Density.
19. ASTM D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
20. ASTM D4564 - Density of Soil in Place by the Sleeve Method.
21. ASTM D4643 - Determination of Water (Moisture) Content of Soil by the Microwave Oven Heating.
22. ASTM D4718 - Correction of Unit Weight and Water Content for Soils Containing Oversize Particles.
23. ASTM D4832 - Compressive Strength of Controlled Low Strength Material.
24. ASTM D4914 - Density of Soil and Rock in Place by the Sand Replacement Method in a Test Pit.
25. ASTM D4959 - Determination of Water (Moisture) Content of Soil by Direct Heating.
26. ASTM D5030 - Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit.
27. ASTM D5080 - Rapid Determination of Percent Compaction.
28. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01 00 00 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name of imported fill materials supplier
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with applicable New Mexico state standards and specifications of the utility provider.
- B. Perform Work in accordance with applicable OSHA trench safety standards.

1.5 FIELD MEASUREMENTS

- A. Verify field trench location.

1.6 COORDINATION

- A. Section 01 00 00 - Administrative Requirements: Coordination and project conditions.

1.7 UNIT PRICES-MEASUREMENT AND PAYMENT

- A. Trenching shall be paid by cubic yard as measured on plans.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Same material as liner subgrade.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Excavate liner trench to lines and grades indicated on Drawings.
 - 1. Engineer reserves right to make changes in lines, grades, and depths of liner trench when changes are required for Project conditions.

3.2 PREPARATION

- A. Call New Mexico "One Call" at 811 and local utilities not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect benchmarks and existing structures from excavating equipment and vehicular traffic.
- D. Maintain and protect above and below grade utilities indicated to remain.
- E. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 LINES, GRADES AND DIMENSIONS

- A. Excavate trench to lines and grades indicated on Drawings.
 - 1. Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required based on field conditions.
 - 2. When bottom of trench is rocky, over-excavate and fill as specified in Section 31 23 23.
- B. Excavate trench to minimum width as indicated on Drawings.
 - 1. Cut trenches to width indicated on Drawings. Permission in writing to use a greater width shall be obtained from the Engineer.
 - 2. Increase trench width as required to meet embedment compaction requirements. Increased trench width, if needed to meet these requirements, shall be provided at no additional cost to the Owner.

3.4 TRENCHING

- A. Excavate subsoil required for placement of liner.
- B. Remove lumped subsoil, boulders, and rock up to the size that would require special equipment beyond conventional machinery used for trenching, in which case the Engineer should be notified immediately.
- C. Contractor is solely responsible for safety of all open trenches and bears sole liability for any incidents or accidents arising from open trenches.
- D. The Owner may restrict the amount of open trench as needed due to safety, land use or environmental considerations.

- E. Intercept and divert surface drainage and precipitation away from excavation through use of dikes, curb walls, ditches, pipes, or other means.
- F. Dewater and maintain substantially dry subgrade during liner installation.
 - 1. Remove groundwater by pumping to keep excavations dry.
 - 2. Comply with New Mexico state standards and requirements for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control.
 - 3. If a separate bid item is not included on the Bid Form for dewatering, the cost thereof will be considered incidental to the cost of trenching and utility installation.
- G. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Engineer until suitable material is encountered. Backfill and compact to reach specified or directed line and grade. Refer to specifications for overexcavation backfill, as set forth in Section 31 23 23.
- H. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to specified or directed line and grade. Refer to specifications for overexcavation backfill, as set forth in Section 31 23 23.
- I. Correct over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.
- J. Remove excess subsoil not intended for reuse, from site.
- K. Protect open trench at all times to prevent danger to the public and to wildlife. Any safety requirements imposed by agencies or entities with jurisdiction must be met.

3.5 BACKFILLING OF TRENCHES

- A. See Section 31 23 23 - Backfill, Articles 3.3 and 3.4 for general backfill requirements, as well as trench backfill and bedding requirements around pipelines.
- B. Compact to 90% standard Proctor for both subgrade on leachate collection piping and on liner anchor trenches.
- C. Compact anchor trenches in 8-inch lifts.

3.6 DISPOSAL OF EXCAVATED MATERIALS

- A. Excess excavated material or excavated material not suitable for backfill may be disposed of on-site, provided that:
 - 1. The finished grade substantially conforms with the Drawings, or any deviation therefrom is approved by the Engineer
 - 2. Blend with natural terrain.
 - 3. Minimum slope: 2%.
 - 4. Maximum slope: 4:1.
 - 5. All excess excavated material spread on the right-of-way is compacted to the same specifications as final backfill, as set forth in Section 31 23 23 - Backfill and the Drawings, and
 - 6. All on-site disposal of material is approved by the Engineer.
 - 7. Do not dispose of waste material by dumping from tops of slopes.
 - 8. Do not dispose of excess material within 15 feet of any wash, drainage or waterway.

3.7 TOLERANCES

- A. Section 01 00 00 - Quality Requirements: Tolerances.
 - 1. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.8 FIELD QUALITY CONTROL

- A. Section 01 00 00 - Execution Requirements: Testing, adjusting, and balancing.
 - 1. Determine compaction characteristics of materials in accordance with ASTM D698.
 - 2. Classify soils in accordance with ASTM D2487.
 - 3. Perform laboratory material tests in accordance with ASTM D1557.
 - 4. Refer to compaction testing requirements in Section 31 22 13 – Rough Grading and/or Section 31 23 23 – Backfill, Field Quality Control, as applicable.

3.9 PROTECTION OF FINISHED WORK

- A. Section 01 00 00 - Execution Requirements: Protecting installed construction.
 - 1. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

SECTION 31 23 23 – BACKFILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Placement of Liner Protective Soil Layer
- B. Related Sections:
 - 1. Section 31 05 19.13 - Geotextile Fabric.
 - 2. Section 31 05 19.15 - Geosynthetic Clay Liner.
 - 3. Section 31 05 19.16 - Polyethylene Geomembrane Liner.
 - 4. Section 31 22 13 - Rough Grading: Site filling.

1.2 REFERENCES

- A. New Mexico Standard Specifications for Public Works Construction (NMSSPWC):
 - 1. NMSSPWC Sections 701, 801 & 802 “Trenching, Excavation and Backfill”.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 3050mm (12-in.) Drop.
 - 2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- C. American Society for Testing and Materials International (ASTM):
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D422 - Particle -Size Analysis of Soils.
 - 3. ASTM D653 - Terminology Relating to Soil, Rock, and Contained Fluids.
 - 4. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 5. ASTM D1140 - Amount of Material in Soils Finer than the No. 200 Sieve.
 - 6. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 7. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³, 2,700 kN-m/m³).
 - 8. ASTM D1633 - Test Method for Compressive Strength of Molded Soil - Cement Cylinders.
 - 9. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 10. ASTM D2216 - Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
 - 11. ASTM D2487 - Classifications of Soils for Engineering Purposes (Unified Soil Classification System).
 - 12. ASTM D2488 - Description and Identification of Soils (Visual-Manual Procedure).
 - 13. ASTM D2774 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
 - 14. ASTM D2901 - Test Method for Cement Content of Freshly Mixed Soil Cement.
 - 15. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

16. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
17. ASTM D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
18. ASTM D4254 - Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
19. ASTM D4318 - Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
20. ASTM D4564 - Density of Soil in Place by the Sleeve Method.
21. ASTM D4643 - Determination of Water (Moisture) Content of Soil by the Microwave Oven Heating.
22. ASTM D4718 - Correction of Unit Weight and Water Content for Soils Containing Oversize Particles.
23. ASTM D4832 - Compressive Strength of Controlled Low Strength Material.
24. ASTM D4914 - Density of Soil and Rock in Place by the Sand Replacement Method in a Test Pit.
25. ASTM D4959 - Determination of Water (Moisture) Content of Soil by Direct Heating.
26. ASTM D5030 - Density of Soil and Rock in Place by the Water Replacement Method in a Test Pit.
27. ASTM D5080 - Rapid Determination of Percent Compaction.
28. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Percentage Compaction: Ratio, expressed as percentage, of actual density of material compared with maximum dry density based on standard Proctor (ASTM D 698) or modified Proctor (ASTM D 1557).
- B. Optimum Moisture Content: Based on standard Proctor (ASTM D 698) or modified Proctor (ASTM D1557).
- C. Unified Soil Classification System: Based on ASTM D 2487.

1.4 SUBMITTALS

- A. Section 01 00 00 - Submittal Procedures.
- B. Submit samples and certified test documentation of all materials to be used.
- C. Materials Source: Submit name of imported fill materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- E. Submit field soil test on material in place as backfill and pipe bedding material.
- F. Submit construction drawings with compaction test locations marked and labeled with station, date, test number, depth of test below ground surface, and test result.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Suitable materials may be processed on-site or may be imported. Regardless if materials are imported or processed on site, they are required to meet the quantity requirements of the project and will be provided at no additional expense to the Owner. The following types of materials are defined as suitable where scheduled:

1. **Type A** (three-quarter inch minus aggregate backfill): Crushed rock or gravel, and sand with the gradation requirements below.

Sieve Size	Percentage Passing
¾-inch	100
No. 4	30-50
No. 200	0-12

2. **Type B** (Class I crushed stone): Manufactured angular, crushed stone, crushed rock, or crushed slag with the following gradation requirements. The material shall have a minimum sand equivalent value of 75.

Sieve Size	Percentage Passing
¾-inch	100
No. 4	30-50
No. 200	0-5

3. **Type C** (sand backfill): Sand with 100 percent passing a 3/8-inch sieve, at least 90 percent passing a No. 4 sieve, and a sand equivalent value not less than 30. This material to be used only when approved by Engineer.
4. **Type D**: (pipe bedding material): Crushed rock or gravel with 100 percent passing a 1/2-inch sieve and not more than 3 to 5 percent passing a No. 10 sieve and 1 to 2 percent passing a No. 200 sieve.
5. **Type E** (pea gravel backfill): Crushed rock or gravel with 100 percent passing a 1/2-inch sieve and not more than 10 percent passing a No. 4 sieve.
6. **Type F** (coarse drain rock): Crushed rock or gravel meeting the following gradation requirements:

Sieve Size	Percentage Passing
2-inch	100
1 ½-inch	90-100
1-inch	20-55
¾-inch	0-15
No. 200	0-3

7. **Type G** (aggregate base, base course) as follows:

Sieve Size	Percentage Passing
1-inch	100
¾-inch	80-100
No. 4	30-60
No. 10	20-45
No. 200	3-10

8. **Type H** (graded drain rock): Drain rock (Protective shall be crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following gradation requirements:

Sieve Size	Percentage Passing
1-inch	100
¾-inch	90-100
3/8-inch	40-100
No. 4	20-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

9. **Type I** Not Used

10. **Type J** (cement-treated backfill): Material which consists of Type H material, or any mixture of Types B, C, G, and H materials which has been cement-treated so that the cement content of the material is not less than 5 percent by weight when tested in accordance with ASTM D2901 - Test Method for Cement Content of Freshly Mixed Soil Cement. The ultimate compressive strength at 28 days shall be not less than 400 psi when tested in accordance with ASTM D1633 - Test Method for Compressive Strength of Molded Soil - Cement Cylinders.

11. **Type K** (topsoil): Stockpiled topsoil material which has been obtained at the site by removing soil to a depth not exceeding 2 feet. Removal of the topsoil shall be done after the area has been stripped of vegetation and debris.

12. **Type L** (controlled low strength material): Controlled low strength material, also referred to as 'soil cement slurry' or 'flowable fill' shall meet the following requirements:

- Slurry shall have a 7-day compressive strength of not less than 50 psi and not more than 150 psi. The compressive strength shall be determined in accordance with ASTM D4832.
- Typical cement content: 3 to 10 percent by dry weight of soil to obtain specified compressive strength.
- The water-cement ratio of the mix shall not exceed 3.5:1. The water content shall not exceed that required to provide a mix that will flow and can be pumped.
- The consistency of the slurry shall be such that the slurry flows easily into all openings between the pipe and the lower portion of the trench.

13. **Type M** (aggregate sub-base, structural fill). Well-graded crushed rock or natural gravel meeting the following gradation requirements:

Sieve Size	Percentage Passing
4-inch	100
3-inch	95-100
No. 200	3-15

- B. Suitable materials for the liner protective soil layer (protective soil layer granular material) are described in Section 31 05 16, Granular Materials, Part 2 Products, 2.1 Protective Soil Layer Granular Material (subsections A, B, and C).

- C. Suitable materials for the leachate collection system are described on the plan set as ¾" to 1 ½" select aggregate or Type F (coarse drain rock) as described above.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 00 00 - Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

- A. Refer to Section 31 05 19.16 Polyethylene Geomembrane Liner

3.3 BACKFILLING FOR STRUCTURES, SITE WORK AND APPURTENANCES

- A. Backfill areas to contours and elevations with unfrozen materials as indicated on the Drawings or as directed by the Engineer.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer.
- D. Place material in continuous layers as follows:
 - E. Granular Fill: Maximum 6 inches compacted depth.
 - F. Employ placement method that does not disturb or damage other work.
 - G. Maintain optimum moisture content of backfill materials to attain required compaction density.
 - H. Make gradual grade changes. Blend slope into level areas.
 - I. Shape and drain embankments and excavations, maintain ditches and drains to provide drainage at all times. Protect graded areas against action of elements prior to acceptance of work and reestablish grade where settlement or erosion occurs.
 - J. Bench hillside slopes or fills to key the embankment. Remove and re-compact a minimum of 12 inches normal to the slope of the hillside or fill as the embankment or fill is brought up in layers.
 - K. Remove surplus backfill materials from site.
 - L. Leave fill material stockpile areas free of excess fill materials.

3.4 BACKFILLING OF TRENCHES

- A. Place a minimum of 3 inches of bedding material in pipe trenches to lines and grades indicated on Drawings or as directed by Engineer and compact before pipe is laid. Grade bedding material parallel to bottom of trench.
- B. Do not place material when either the material or the surface upon which it is to be placed is frozen.
- C. Where rock is present and where there is concern that settling rocks in the surrounding material may rupture the pipeline, the amount of bedding material below and above the pipe shall be increased.
- D. When using free-draining crushed rock or gravel for embedment on stretches longer than 300 feet, install trench plugs composed of silty, non-plastic material at 300 foot intervals to impede flow of trench water through the embedment.

3.5 COMPACTION

- A. Do not place and compact soil under the following conditions:

1. Ambient air temperature below freezing.
 2. Rain that creates puddles in clayey or silty materials.
 3. Ice or snow pockets visible in material being placed.
- B. Surface Preparation:
1. Prepare surface so that first compacted lift will be placed on firm, stable base. Compact surface to specified percent compaction, if necessary.
 2. For water-retaining compacted fill, scarify and moisten surface to provide satisfactory bonding surface before placing first layer of material to be compacted.
 3. Do not place material to be compacted on frozen surface.
- C. Placement:
1. Place soil to be compacted in horizontal layers.
 2. Blend materials as needed to ensure compacted fill is homogenous and free from lenses, pockets, streaks, voids, laminations and other imperfections.
- D. Compaction Procedures:
1. Cohesionless Free-Draining Material: Compact in horizontal layers to maximum compacted thickness of:
 - a. Tampers and rollers: 6 inches
 - b. Crawler-type tractors, vibrating drum rollers, surface vibrators or similar equipment: 12 inches
 - c. Saturation and internal vibration: Penetrating depth of vibrator.
 2. Demonstration: Lift thicknesses may vary depending on equipment and methods. Field adjustments to the specified lift thicknesses may be allowed or required. Contractor shall demonstrate that proposed equipment and methods will meet required compaction for the proposed lift thickness.
 3. Flooding and jetting are not allowed unless specifically approved by the Engineer.
- E. Moisture Content:
1. Optimum moisture content for each soil type, whether native soil or imported material, shall be determined by the standard Proctor method, ASTM D 698.
 2. Moisture content during compaction shall be no more than 4 percentage points wet or dry of optimum moisture content.
 3. Moisten or aerate material, as necessary, to provide specified moisture content. Add water to soil in increments that will permit moisture content to be uniform and homogenous through each layer after mixing.
 4. Add no more than 2 percent water to fill by sprinkling just prior to compaction when fill is clayey and contains dry clods of clay.
 - a. If clayey soil is more than 4 percent below optimum moisture, pre-conditioning and curing may be required to obtain uniform and homogenous distribution of moisture in clods.
 - b. Use of disks, harrows or rakes may be required to blend moisture prior to placement and compaction.
 5. For cohesionless soils, add water as necessary during compaction, as these soils are free-draining.
- F. Minimum Percent Compaction:
1. Over-excavation: Backfill of over-excavation to specified or directed lines shall be compacted to same percent compaction as embedment material or undisturbed foundation material, whichever is greater. If the in-place compaction of the undisturbed foundation material is greater than 95%, the over-excavation backfill may be compacted to 95%.

2. Initial and Final Backfill: compact to 90%, as directed by the Engineer.
3. Embankments: Compact to same requirements as Final Backfill.
4. Note that all Percent Compaction values in these Technical Specifications and Drawings are based on Standard Proctor, ASTM D698, unless otherwise noted.

3.6 TOLERANCES

- A. Section 01 00 00 - Quality Requirements: Tolerances.
 1. Top Surface of General Backfilling: Plus or minus 0.1 foot from required elevations.
- B. Percent Compaction: Shall meet minimum required compaction as set forth in these specifications
- C. Moisture Content: As set forth in these specifications.

3.7 FIELD QUALITY CONTROL

- A. Section 01 00 00 - Execution Requirements: Testing, Adjusting, and Balancing.
- B. Perform laboratory material tests in accordance with ASTM D698.
- C. Perform in place compaction tests in accordance with the following:
 - A. Density Tests: ASTM D1556, ASTM D2167, or ASTM D6938.
 - B. Moisture Tests: ASTM D6938.
- D. When tests indicate Work does not meet specified requirements, remove material, replace, compact, and retest.
- E. Compaction testing shall be done to the extent such that the Owner and Engineer can be reasonably assured that the backfill has been placed in accordance with the requirements of the Contract Documents, or as required by the utility for which the trenching is being provided, whichever is the more stringent.
- F. Correction of Substandard Work: All fill and backfill represented by tests that fail to meet compaction, moisture content, soil classification or other specifications shall be uncovered as needed, replaced as needed, re-compacted and re-tested until all specifications are met, at no additional expense to the Owner.
- G. Elevations, lines and grades of replaced material, as well as of pipe and other structures resting against such material, shall be re-surveyed at the direction of the Engineer. Contractor shall correct elevations, lines and grades as needed, at no additional expense to the Owner.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 00 00 - Execution Requirements: Protecting Installed Construction.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 33 47 28 - PVC LEACHATE PIPE

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals required and install polyvinyl chloride leachate pipe, fittings and appurtenances as shown on the Drawings and as specified herein.
- B. Related Sections:
 - 1. Section 31 05 16 - Granular Materials
 - 2. Section 31 05 19.13 - Geotextile Fabric
 - 3. Section 31 05 19.16 - Polyethylene Geomembrane Liner

1.2 SUBMITTALS

- A. Two weeks prior to furnishing and installation of the PVC pipe, the Contractor shall submit the following information to the Owner for approval:
 - 1. A list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.
 - 2. The origin of the resin to be used in the manufacturing of the pipe including the suppliers name and production plant, as well as brand name and number.
 - 3. Manufacturer quality control manual describing implementation of quality control procedures during pipe manufacturing process.
 - 4. Manufacturer's certification of compliance with these Specifications.
 - 5. Prior to commencing work, submit complete, detailed shop drawings of all PVC pipe, including the location of all fittings, joints and connections to structures.
 - 6. Submit and comply with pipe manufacturer's recommendations for handling, storing and installing pipe and fittings.
 - 7. Submit for each shipment of pipe a manufacturer's certification that the pipe was manufactured from the same resin identified above.
 - 8. During progress of the work, the Contractor shall maintain an accurate record of the location of the piping with reference to job base lines, grades, and elevations. Show all changes made in the piping installation from the layout and materials shown on the approved Shop Drawings.

1.3 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D1784 -Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 - 2. ASTM D1785 -Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
 - 3. ASTM D2241 -Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR Series).
 - 4. ASTM D2466 -Standard Specifications for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

5. ASTM D2467 -Standard Specification for Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
 6. ASTM D2564 -Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping System.
 7. ASTM D2672 -Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement.
 8. ASTM D2774 -Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.
 9. ASTM D2837 -Standard Test Method for Obtaining Hydrostatic Design Basis for, Thermoplastic Pipe Materials.
 10. ASTM D3139 -Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
 11. ASTM F477 -Standard Specification for Elastomeric Seals (Gasket) for Joining plastic Pipe.
 12. ASTM F656 -Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.4 QUALITY ASSURANCE

- A. Finished Product Evaluation: Each length of pipe produced shall be checked by production staff for the items listed below. The results of all measurements shall be recorded on production sheets which become part of the manufacturer's permanent records.
1. Pipe in process shall be checked visually, inside and out for cosmetic defects (grooves, pits, hollows, etc).
 2. Pipe outside diameter shall be measured using a suitable periphery tape to ensure conformance with ASTM D1785.
 3. Pipe wall thickness shall be measured at 12 equally spaced locations around the circumference at both ends of the pipe to ensure conformance with ASTM D1785.
 4. Pipe length shall be measured.
 5. Pipe marking shall be examined and checked for accuracy.
 6. Pipe ends shall be checked to ensure they are cut square and clean.
- B. Stress Regression Testing: The PVC pipe manufacturer shall provide certification that stress regression testing has been performed on the specific PVC resin being utilized in the manufacture of this product. This stress regression testing shall have been done in accordance with Plastic Pipe Institute (PPI) and the manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 2,000 psi as determined in accordance with PPI procedures.

1.5 WARRANTY

- A. The pipe material manufacturer shall provide an unconditional extended warranty for the pipe covering the cost of materials for repair or replacement plus installation manpower should the pipe fail within the warranty period. The manufacturer's extended warranty shall be for ten years after the final acceptance of the project by the Owner. The manufacturer shall guarantee that the pipe furnished is suitable for the purpose intended and free from defects of material and workmanship for the duration of the extended warranty. In the event the pipe fails to perform as

specified, the pipe manufacturer shall promptly replace defective pipe without any cost to the Owner.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Care shall be taken in shipping, handling and laying to avoid damaging the pipe and fittings. Extra care will be necessary during cold weather construction. Any pipe damaged in shipment shall be replaced as directed by the Engineer.
- B. Any pipe or fitting showing a crack or which has received a blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.
- C. While stored, pipe shall be adequately supported from below at not more than 3 foot intervals to prevent deformation. Pipe shall not be stacked higher than 6 feet. Pipe and fittings shall be stored in a manner which will keep them at ambient outdoor temperatures. Temporary shading as required to meet this requirement shall be provided. Simple covering of the pipe and fittings which allows temperature buildup when exposed to direct sunlight will not be permitted. In the event the pipe fails to perform as specified, the pipe manufacturer shall promptly replace defective pipe without any cost to the Owner.

PART 2 PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) PIPE

- A. Pipe and fittings shall be manufactured from a PVC compound which meets the requirements of Type 1, Grade I, Polyvinyl Chloride as outlined in ASTM D1784. A Type I, Grade I compound is characterized as having the highest requirements for mechanical properties and chemical resistance.
- B. Polyvinyl chloride pipe (PVC) shall be Schedule 80 or as indicated on the Drawings. The pipes shall conform to the requirements of ASTM D1785 and shall have the nominal dimensions shown on the Drawings.
- C. Fittings shall conform to the requirements of ASTM D2467 for socket type, joints.
- D. Pipe shall be furnished in standard lying lengths not exceeding 20 feet.

2.2 JOINTS

- A. The pipe shall be joined with gasketed, integral bell and spigot or double bell coupling with plain end spigot type joints except for restrained joint PVC pipe less than 4" in diameter which shall be solvent cemented joints. Gasketed joints shall conform to ASTM D3139. Gaskets shall conform to ASTM F477. Solvent cement shall conform to ASTM D2564 and primer shall conform to ASTM F656.
- B. In underground installations only bell and spigot joints shall be used and installation shall conform to ASTM D-3212. Exposed PVC pipe shall have sleeve type PVC expansion joints so as to allow 1-inch expansion per hundred feet length of pipe. Buried PVC pipe shall have spool type PVC expansion joints. All socket type connections shall be joined with Primer, and PVC solvent cement, complying to ASTM D- 2564.

2.3 IDENTIFICATION

- A. Each length of pipe and each fitting shall be marked with the name of the manufacturer, size and class. All gaskets shall be marked with name of manufacturer, size and proper insertion direction.

2.4 RUBBER EXPANSION JOINTS (FLEXIBLE JOINTS)

- A. Rubber expansion joints shall be the flanged single filled arch type as supplied by Uniroyal Industrial Products, Inc., Adscoc, Inc., 'or equal. Material shall be reinforced neoprene rubber, of sufficient size and thickness of rubber, in the opinion of the Engineer, to ensure perfect work for the material being conveyed, and to withstand the test pressures of adjoining pipe flanges. Rubber expansion joints shall be supplied complete with all required retaining rings, stretcher bolt plates, rubber and steel washers, flange bolts, stretcher bolts and all other necessary parts and appurtenances. Control units shall be furnished and installed as required to enable joints to withstand test pressures exceeding the design capabilities of uncontrolled joints.

2.5 ADAPTERS

- A. Flanged adapters for making field joints between flanged and plain end a pipe shall be provided where shown, required or directed. Adapters shall be as manufactured by Dresser Industries, Alco Standard Anchor coupling Company, or equal. Gaskets shall be of the appropriate type for the service used as recommended by the manufacturer and as approved by the Engineer.
- B. Adapters required for joining pipe of different materials shall be provided as required or directed. The type of adapter shall be as recommended by the manufacturer of the pipe involved and as approved by the Engineer.

2.6 PERFORATIONS

- A. The leachate collection pipes inside the lined area, as shown on the Drawings, shall be perforated. The perforations shall be drilled into the pipe after manufacture. The perforated pipe shall have two rows of holes ½-in in diameter on 6-in centers, with allowable tolerances 1/8-in on the diameter plus 1-in on the spacing. The rows shall be parallel to the axis of the pipe and 120 degrees apart (plus or minus 5 degrees).
- B. The perforation shall be covered with tape compatible to the pipe material upon delivery to prevent soil material from entering the pipe prior to installation.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Polyvinyl chloride pipe shall be installed in accordance with the instruction of the manufacturer, as shown on the Drawings and as specified herein.
- B. Pipe shall be laid to lines and grade shown on the Drawings with bedding and backfill as shown on the Drawings. The tape covering the perforations shall be removed during installation. The pipe shall be installed such that perforations face the bottom of trench.
- C. When laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by fabricated plugs, or by other approved means. All plugs shall be OD fitting type plugs. No plugs will be allowed that require insertion of the plug into pipe.

- D. Pipe shall be stored on clean level ground to prevent undue scratching or gouging. The handling of the pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. The maximum allowable depth of cuts, scratches or gouges on the exterior of the pipe is 10 percent of wall thickness. The interior pipe surface shall be free of cuts, gouges or scratches.
- E. Sections of pipe with cuts, scratches or gouges deeper than allowed shall be used.
- F. The pipe shall be jointed as specified in Paragraph 2.2 A.
- G. When cutting pipe is required, the cuttings shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a bell shall be beveled to conform to the manufactured spigot end.
- H. Mechanical connections of the PVC pipe to auxiliary equipment such as valves, pumps and tanks shall be through flanged connections. Flange connections shall be provided with a full face neoprene gasket

3.2 CLEANING

- A. At the conclusion of the work, thoroughly clean all of the new pipelines to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. Debris cleaned from the lines shall be removed from the job site. If, after this cleaning, any obstructions remain, they shall be removed.
- B. All perforated PVC leachate collection piping shall be flushed with a minimum of 1,000 gallons of water.

3.3 TESTING PIPE

- A. PVC solid (non-perforated) pipe shall be pressure tested with air to 6 psi for four (4) hours. No loss of pressure is acceptable over the 4 hours.
- B. All PVC Solid Pipe shall be tested for its entire length. Pipe may be tested in sections, as approved by the Engineer. All test results shall be certified in writing by the Contractor.
- C. Leakage at the joints and elsewhere shall be corrected by approved means and the piping retested in accordance with the specification until the tests are satisfactory.

END OF SECTION

SECTION 33 01 33 - CCTV INSPECTION OF LEACHATE PIPELINES

PART 1 GENERAL

1.1 SUMMARY

- A. Cleaning of designated leachate pipelines to remove sediment, roots, grease, and other debris as specified herein and in accordance with the requirements of the Contract Documents.
- B. Inspection of designated leachate pipelines using closed circuit television (CCTV) inspection methods.
- C. Removal of obstructions found during cleaning operations.
- D. Removal and disposal of the debris collected from cleaning operations as specified herein and in accordance with the requirements of the Contract Documents
- E. All necessary and required traffic control.
- F. Additional services for related activities.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- B. CCTV Inspection of leachate pipelines:
 - 1. Basis of Measurement: By the linear foot from center of manhole to center of manhole.
 - 2. Basis of Payment: Actual lengths of leachate pipeline inspected and recorded, as measured in the field at grade, regardless of pipeline size.
 - 3. CCTV Inspection includes:
 - a. All labor, tools, equipment, supervision and submittals of quality video, reports, databases and logs,
 - b. Multiple manhole setups required to inspect leachate pipeline when it cannot be performed from one manhole due to possible obstruction,
 - 4. No separate payment will be made for the following:
 - a. Poor quality or unclear video and/or audio.

1.3 REFERENCES

- A. Electronics Industries Association (EIA).
- B. National Association of Sewer Service Companies (NASSCO).

1.4 SUBMITTALS

- A. Section 01 10 00 – Submittal Procedures: Requirements for Submittals
- B. Quality Assurance: Submit one example DVD of previous sewer inspection work that shows operational and structural defects in sewers, complete with audio commentary and inspection log(s). Prior to submittal finalize the DVD to prevent rerecording.
 - 1. DVD and inspection logs will be reviewed to determine if quality of CCTV image is acceptable, and if defects were properly identified and documented according to Engineer's requirements.
 - 2. Modify equipment and/or inspection procedures to achieve report material of acceptable quality.
 - 3. Do not commence Work prior to approval of report material quality by Engineer. Upon acceptance, report material shall serve as standard for remaining Work.

- C. Inspection Logs: Unless otherwise indicated, submit inspection logs that include the following as a minimum:
 1. Project title
 2. Name of Santa Clara Pueblo
 3. Date and Time pipeline inspection started and ended
 4. Manhole to manhole pipe section
 5. Pipe segment length
 6. Pipe material
 7. Line size
 8. Compass direction of viewing
 9. Direction of camera's travel
 10. Pipe depth
 11. Operator name
 12. Tape counter reading at beginning and end of each manhole to manhole pipe segment.
- D. DVDs: Submit completed DVDs after cleaning and rehabilitation. Prior to submittal, finalize the DVD to prevent re-recording. DVDs must be in a readable format with standard viewing software such as Windows Media Player, and if a specific program is needed please submit for preapproval.
- E. Maintain copy of all inspection documentation (DVDs, databases, and logs) for duration of Work and warranty period.
- F. CCTV Inspection Database: The data obtained for all inspections shall be provided in digital format compatible with the most recent version of Microsoft Access or Excel. The database should be in the NASSCO Standard PACP Data Format.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. DVD: 120 minute minimum, high-quality color, type DVD-R, DVD-RW, or DVD+R
 1. Audio portion of composite DVD shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
 2. Store in upright position in an appropriate CD or DVD case to prevent scratches.
 3. Identify each disk with tape labels showing Owner's name, Contractor's name, and each pipe segment of leachate pipeline represented on DVD or provide an index or table of contents if more than one segment is on the disk.
- B. Television Inspection Camera(s): Equipped with rotating head, capable of 90-degree rotation from horizontal and 360-degree rotation about its centerline.
 1. Minimum Camera Resolution: 400 vertical lines and 460 horizontal lines.
 2. Camera Lens: Not less than 140 degree viewing angle, with automatic or remote focus and iris controls.
 3. Focal Distance: Adjustable through range of 6 inches (152 mm) to infinity.
 4. Camera(s) shall be intrinsically safe and operative in 100 percent humidity conditions.
 5. Lighting Intensity: Remote-controlled and adjusted to minimize reflective glare.
 6. Lighting and Camera Quality: Provide clear, in-focus picture of entire inside periphery of sewer.
- C. Footage Counter: Measures distance traveled by camera in leachate pipeline, accurate to plus or minus 2 feet (0.6 m) in 1,000 feet (305 m).

- D. DVD Titling: Each segment shown on the DVD should have its own Chapter titled with the beginning and end point of the pipeline segment.

PART 3 EXECUTION

3.1 CCTV INSPECTION REQUIREMENTS

- A. Access: The Engineer shall have access to observe and monitor operations at all times.
- B. DVD Commentary: Record the following information on audio track of inspection DVD: narrative of location, direction of view, manhole numbers, pipe diameter and material, date, time of inspection, and location of laterals and other key features.
 - 1. DVD shall visually display this information at beginning and end of each manhole-to-manhole pipe segment.
 - 2. DVD between manholes shall visually display length in feet from starting point of given segment.
- C. Leachate Pipeline Identification: DVD and inspection documentation shall include leachate pipeline identifiers shown on Drawings provided by the Owner.
- D. Image Perspective: Camera image shall be down center axis of pipe when camera is in motion.
 - 1. Provide 360-degree sweep of pipe interior at points of interest, to more fully document existing condition of sewer.
 - 2. Points of interest may include, but are not limited to the following: defects, cracks, voids, connections or service laterals, pipe joints, encrustations, mineral deposits, debris, sediment, and any location determined not to be clean or damaged.
 - 3. Cabling system employed to transport camera and transmit its signal shall not obstruct camera's view.
- E. Leachate Pipeline Reach Length: Physically measure and record length of each leachate pipeline reach from centerline of its terminal points.
- F. Inspection Rate: Maximum rate of travel shall be 30 feet per minute when recording.

3.2 FIELD QUALITY CONTROL

- A. Post construction DVD video and inspection logs are to be submitted to the Engineer for review prior to final payment. The Engineer will review DVD video and inspection logs to ensure compliance with requirements listed in this specification.
- B. Should any portions of the inspected DVD video be of inadequate quality of coverage, as determined by the Engineer, the Contractor will have that portion re-inspected at no additional cost to the Owner. All original DVD video and inspection logs remain the property of the Owner.

3.3 CLEANING

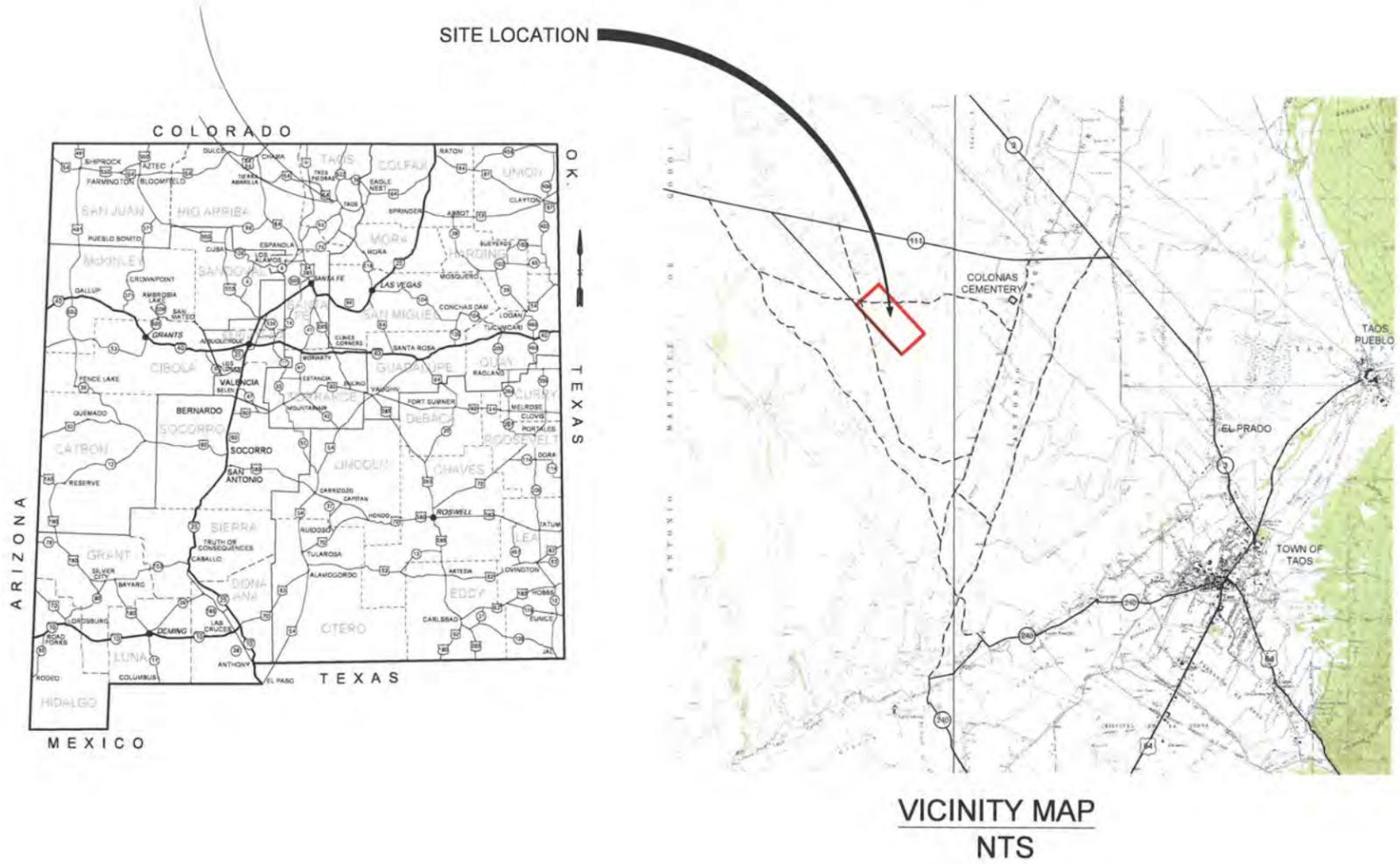
- A. Keep premises free from accumulations of waste materials, rubbish, and other debris resulting from work.
- B. Remove waste materials, rubbish, and debris from and about premises and dispose of in landfill area as directed by landfill staff.
- C. Remove tools, construction equipment and machinery, and surplus materials.
- D. Restore to original condition portions of site not designated for alterations by Contract Documents.

END OF SECTION

TAOS REGIONAL LANDFILL CELL 5 CONSTRUCTION DRAWINGS

TAOS COUNTY, NEW MEXICO

OCTOBER 2025

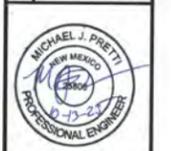


SHEET LIST TABLE	
Sheet Number	Sheet Title
1	COVER SHEET
2	NOTES
3	SURVEY CONTROL PLAN
4	SITE DEVELOPMENT PLAN
5	GRADING PLAN (TOP OF SUBGRADE)
6	PROTECTIVE SOIL LAYER (PSL) PLAN
7	SECTION CELL 5 - ALIGNMENT A
8	SECTION CELL 5 - ALIGNMENT B
9	LEACHATE COLLECTION SYSTEM DETAILS
10	LINER INSTALLATION DETAILS
11	LINER INSTALLATION DETAILS

Rev #	Date	Description	By	Checked

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TAOS REGIONAL LANDFILL
CELL 5 CONSTRUCTION DRAWINGS
TAOS COUNTY, NEW MEXICO
COVER SHEET



To Request a Line Locate Dial 811

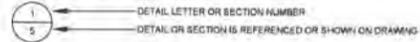
New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED		
Designed MJP	Drawn AB	Checked SAM
Date: October 2025		
Scale: Horiz: N/A Vert: N/A		
Project No: 4230627		
Sheet: 1		

GENERAL NOTES:

1. THERE WILL BE A PERSON OR PERSONS (HEREINAFTER KNOWN AS THE OWNER'S REPRESENTATIVE) CHOSEN BY THE TOWN OF TAOS (HEREINAFTER KNOWN AS OWNER) TO ACT AS CONTACT PERSONS WITH THE ENGINEER. THE OWNER'S REPRESENTATIVES WILL OBSERVE, PROVIDE INFORMATION AND PROVIDE CRITICAL LOCATIONS THROUGH THE ENGINEER TO THE CONTRACTOR IN THE FIELD.
2. SOUDER, MILLER AND ASSOCIATES SHALL HEREINAFTER BE KNOWN AS THE ENGINEER. THERE WILL BE A PERSON PROVIDED BY THE ENGINEER THAT WILL ACT AS A RESIDENT PROJECT REPRESENTATIVE WHO WILL BE THE FIELD CONTACT FOR QUESTIONS FROM THE CONTRACTOR TO THE ENGINEER.
3. THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND IS NOT LIABLE FOR PROBLEMS THAT MAY ARISE FROM THE CONTRACTOR'S FAILURE TO FOLLOW THESE DRAWINGS, SPECIFICATIONS, AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS ARISING FROM FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES, OR CONFLICTS.
4. ALL CONSTRUCTION AND TESTING REQUIREMENTS, TESTING FREQUENCIES FOR CONSTRUCTION OF A NEW SOLID WASTE LANDFILL CELL SHALL BE GOVERNED BY THE MOST RECENT NEW MEXICO SOLID WASTE RULES, 20.9.2-20.9.10 NMAC AND ANY ADDITIONAL REQUIREMENTS OF THE CONSTRUCTION QUALITY ASSURANCE/EQUALITY CONTROL PLAN (QA/QC).
5. WHERE PARTICULAR WORK ITEMS ARE NOT SPECIFIED HEREIN OR IN THE PROJECT SPECIFICATIONS, THE CURRENT EDITION OF NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND THE APPLICABLE SUPPLEMENTAL SPECIFICATIONS SHALL GOVERN CONSTRUCTION OF THIS PROJECT UNLESS OTHERWISE NOTED OR WITHIN A NEW LANDFILL BOUNDARY.
6. IN THE EVENT THAT THE CONTRACTOR ENCOUNTERS ITEMS OF HISTORICAL IMPORTANCE, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY AND WORK IN THE AREA SHALL IMMEDIATELY CEASE UNTIL THE SITE CAN BE PROPERLY CLEARED.
7. ALL WORK IN THE VICINITY OF LIVE STREAMS, WATER IMPOUNDMENTS, WETLANDS OR IRRIGATION SUPPLIES SHALL BE EFFECTED IN SUCH A MANNER AS TO MINIMIZE VEGETATION REMOVAL, SOIL DISTURBANCE AND EROSION. CROSSINGS OF LIVE STREAMS WITH HEAVY EQUIPMENT SHALL BE MINIMIZED, AS DETERMINED BY THE ENGINEER. EQUIPMENT REFUELING, MAINTENANCE AND CONCRETE DUMPING IN THE VICINITY OF WATER COURSES IS STRICTLY PROHIBITED AND SHALL BE PERFORMED IN PROPER CONTAINMENT AREAS.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FAMILIARIZE HIMSELF WITH THE LOCATION OF ALL UTILITIES LOCATED WITHIN THE LIMITS OF CONSTRUCTION. THE GENERAL LOCATION OF KNOWN EXISTING UTILITIES HAS BEEN SHOWN ON THE CONSTRUCTION DRAWINGS TO INDICATE THAT CAUTION MUST BE EXERCISED WHEN WORKING IN THESE AREAS. IN MANY CASES THE EXACT LOCATION OF THE FACILITIES IS NOT KNOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL OVERHEAD AND UNDERGROUND UTILITIES WITHIN THE VICINITY OF THE NEW CONSTRUCTION PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR WORKING WITH THE RESPECTIVE UTILITY COMPANIES SHALL ACCURATELY LOCATE AND MARK ALL BURIED FACILITIES INCLUDING SERVICE LINES. ALL EQUIPMENT LABOR, ETC. NECESSARY TO PROPERLY LOCATE THE EXISTING UTILITIES SHALL BE FURNISHED BY THE CONTRACTOR. THE COST OF WHICH SHALL BE INCLUDED IN THE UNIT PRICES ON VARIOUS BID ITEMS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTING THE PROJECT ACCORDING TO APPLICABLE CURRENT NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (NMSPPWC), AWWA SPECIFICATIONS, PROJECT MANUAL AND NMED REQUIREMENTS UNLESS OTHERWISE NOTED.
10. CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY & ALL PERMITS THAT MAY BE REQUIRED WHICH HAVE NOT ALREADY BEEN OBTAINED BY THE ENGINEER.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVALS REQUIRED BY THE PLANS WHETHER SPECIFICALLY LISTED OR NOT TO COMPLETE THE PROJECT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND THE CONTRACTOR WILL NOT RECEIVE ADDITIONAL COMPENSATION FOR UNLISTED REMOVALS. THE CONTRACTOR SHALL DISPOSE OF ALL UNSUITABLE MATERIAL IN AN ENVIRONMENTALLY ACCEPTABLE MANNER AT A LOCATION ACCEPTABLE TO THE OWNER AND ENGINEER.
12. THE CONTRACTOR SHALL SALVAGE ANY OBSTRUCTIONS NOTED ON THE CONTRACT DRAWINGS AS WELL AS REUSABLE ITEMS FOUND DURING CONSTRUCTION. SUCH ITEMS, IF ANY, SHALL BE DELIVERED TO THE PROPER OWNER AS DIRECTED BY THE ENGINEER AND/OR OWNER DURING CONSTRUCTION.
13. THE CONTRACTOR WILL NOT BE ALLOWED TO STORE EQUIPMENT IN THE CONSTRUCTION ZONE DURING NON-WORKING HOURS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A STORAGE AREA(S) FOR THIS PROJECT. THE CONTRACTOR WILL BE RESPONSIBLE FOR SITE SECURITY.
14. CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY LOCATION, PROTECTION, AND VERIFICATION. CONTRACTOR MUST NOTIFY NEW MEXICO ONE CALL SYSTEM, INC. AT 1-800-321-ALERT1, AND ALL LOCAL UTILITY PROVIDERS THREE (3) DAYS BEFORE STARTING UTILITY CONSTRUCTION.
15. THROUGHOUT THE LIFE OF THE PROJECT, THE CONTRACTOR SHALL KEEP ANY EXISTING SYSTEM OPERATING. THE CONTRACTOR SHALL REPORT ANY UTILITY SHUTOFFS OF ANY OR ALL CONNECTIONS TO THE USER'S REPRESENTATIVE TWENTY-FOUR (24), OR MORE, HOURS IN ADVANCE OF THE SHUT-OFFS. ALL LOCAL RESIDENTS AND BUSINESSES SHALL BE CONTACTED BEFORE ANY DISCONTINUATION OF WATER SERVICE. ANY INTERRUPTION OF WATER SERVICE SHALL BE KEPT TO THE MINIMUM LENGTH OF TIME POSSIBLE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A WATER SOURCE FOR CONSTRUCTION. NO DIRECT PAYMENT WILL BE MADE FOR WATER. ALL PERMITS, FEES, EQUIPMENT, HAUL, ETC. RELATIVE TO OBTAINING WATER SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.
17. CONTRACTOR SHALL CONFINE ALL CONSTRUCTION OPERATIONS TO THE LIMITS OF THE PROJECT DEFINED IN THESE DRAWINGS, AND IN NO WAY ENDOURCH ONTO ADJACENT PROPERTIES, UNLESS LEGAL EASEMENTS ARE PROVIDED. CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR ANY AGREEMENTS NEEDED, OR DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES TO PUBLIC OR PRIVATE PROPERTY INCLUDING UTILITIES.
18. THE CONTRACTOR SHALL TAKE ANY NECESSARY MEASURES TO PROTECT HORIZONTAL AND VERTICAL CONTROL SURVEY MONUMENTS FROM DAMAGE DURING CONSTRUCTION. IF DURING EXECUTION OF THE PROJECT, THE CONTRACTOR'S ACTIVITIES DISTURB OR DESTROY SUCH MONUMENTS, THE CONTRACTOR SHALL RE-ESTABLISH THEM IN ACCORDANCE WITH THE STANDARDS AND PROCEDURES SET FORTH IN THE "GEODETIC MARK PRESERVATION GUIDEBOOK" FOR MORE INFORMATION CONTACT NGS MARK PRESERVATION CENTER, NOAA (505) 768-3606.
19. CONTRACTOR SHALL REPAIR ANY EXISTING STRUCTURE OR UTILITY CONDUIT DAMAGED DURING THE EXECUTION OF THE PROJECT, AT NO ADDITIONAL COSTS TO THE OWNER.
20. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF MATERIALS AND EQUIPMENT PRIOR TO AND AFTER THEIR INSTALLATION, AS APPLICABLE, UNTIL THE PROJECT'S FINAL ACCEPTANCE BY THE OWNER.
21. AS REQUIRED, NOT LESS THAN 5 DAYS PRIOR TO INITIATING ANY WORK, THE CONTRACTOR SHALL SUBMIT A DUST SUPPRESSION AND EROSION CONTROL PLAN FOR THE OWNER'S APPROVAL. ALL CONSTRUCTION WORK SHALL BE PERFORMED IN SUCH A MANNER THAT WILL HAVE NO ADVERSE EFFECT UPON ADJACENT PROPERTIES OR PUBLIC ROADWAYS.
22. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR EROSION CONTROL INCIDENTAL TO THE CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL SUBMIT A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) TO THE OWNER'S ENGINEER. THE PLAN WILL ADDRESS ALL CONSTRUCTION PHASES AND THE PROPOSED POLLUTION PREVENTION AND SEDIMENT CONTROL MEASURES. THIS SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT REQUIREMENT FOR ALL CONSTRUCTION ACTIVITIES.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEANUP OF SPILLS ASSOCIATED WITH PROJECT CONSTRUCTION AND SHALL REPORT AND RESPOND TO SPILLS OF HAZARDOUS MATERIALS SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS WHICH MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING PAST SPILLS ENCOUNTERED DURING CONSTRUCTION AND OF CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION. REPORTS SHALL BE MADE IMMEDIATELY TO THE NM ENVIRONMENT DEPARTMENT EMERGENCY RESPONSE TEAM AT (505) 476-6900 (MAIN) OR (505) 476-8485 AND TO THE ENGINEER. ANY UNREPORTED SPILLS IDENTIFIED AFTER CONSTRUCTION AND THE ASSOCIATED CLEANUP COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
24. THE CONTRACTOR SHALL PREPARE AND MAINTAIN UP-TO-DATE "AS-BUILT" DRAWINGS. UPDATING SUCH DRAWINGS SHALL BE DONE NOT LESS THAN ONCE EVERY WEEK. THE NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) AND THE ENGINEER OR ENGINEER'S REPRESENTATIVE SHALL BE ALLOWED TO REVIEW THESE DRAWINGS AT ANY TIME DURING CONSTRUCTION. PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TWO (2) SETS OF COMPLETE AS-BUILT DRAWINGS TO THE ENGINEER.
25. CONTRACTOR SHALL SUBMIT ASTM OR AASHTO CERTIFICATES OF MATERIAL'S COMPLIANCE TO THE ENGINEER NO LESS THAN 5 DAYS PRIOR TO INITIATING ANY WORK INVOLVING SUCH MATERIALS.
26. EARTH SURFACE UPON WHICH THE GCL & HDPE LINER ARE TO BE INSTALLED SHALL MEET COMPACTION REQUIREMENTS CONSISTING OF A MINIMUM 6 INCH LAYER OF IN-SITU SOIL OR SELECT FILL COMPACTED TO 80% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR DENSITY AT NO MORE THAN 4 PERCENTAGE POINTS WET OR DRY OF OPTIMUM MOISTURE CONTENT. SEE NMAC SECTION 20.8.4.13.
27. ANY OVER-EXCAVATION AND RE-COMPACTION REQUIRED TO MEET GEOTECHNICAL REQUIREMENTS WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO SEPARATE PAYMENT WILL BE MADE THEREFORE. SEE NMAC SECTION 20.9.4.13E(3a).
28. THE 2 FOOT PROTECTIVE SOIL LAYER (SOIL CUSHION) SHALL CONFORM TO NMAC SECTION 20.8.4.13E(4).
29. CONTRACTOR IS TO PROVIDE PROTECTIVE SOIL LAYER THAT MEETS THE SPECIFICATIONS OF THE PROJECT MANUAL, QUALITY ASSURANCE PROJECT PLAN (QAPP) FOR CONSTRUCTION QUALITY ASSURANCE (CQA) AND NMED REQUIREMENTS.
30. ALL AREAS DISTURBED BY THE CONSTRUCTION ACTIVITIES OF THIS PROJECT SHALL BE RESTORED, RE-GRADED IN A MANNER ACCEPTABLE TO NMED, THE OWNER, USER AND ENGINEER.
31. EXCESS MATERIAL, IF APPLICABLE, SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF BY THE CONTRACTOR AT HIS EXPENSE UNLESS OTHERWISE DIRECTED BY THE OWNER, USER OR ENGINEER.
32. OBSTRUCTIONS REMOVED FROM THE WORK AREAS SHALL BE DISPOSED OF BY THE CONTRACTOR. DISPOSAL OF USABLE MATERIALS (E.G. EXCESS DIRT, GRAVEL, ETC.) SHALL BE AT A SITE DESIGNATED BY THE OWNER DURING CONSTRUCTION. THE DISPOSAL SITE FOR EXCESS MATERIAL MUST BE APPROVED BY THE OWNER'S OR USER'S PROJECT MANAGER AND ENGINEER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE A DISPOSAL SITE FOR NON-USABLE MATERIALS (E.G. BRUSH, CONCRETE), ACCORDING TO THE NMED. WASTE PAVEMENT AND CONCRETE ARE NOT CONSIDERED REGULATED WASTE AND CAN BE DISPOSAL OF FOR USE AS FILL OR EROSION CONTROL IF A SITE CAN BE LOCATED. ALL OTHER WASTE (E.G. TRASH, BRUSH, ETC.) SHALL BE DISPOSAL OF AT AN APPROVED LANDFILL. ALL DISPOSAL SITES MUST BE APPROVED BY THE ENGINEER AND OWNER PRIOR TO DISPOSAL OF ANY WASTE.
33. CONTRACTOR IS RESPONSIBLE FOR EXPOSING AND LOCATING THE END POINT (TIE-IN LOCATION) OF THE EXISTING LINER FROM CELL 4B. TIE-IN POINT AND MATERIAL NECESSARY TO TIE INTO THE EXISTING IS INCIDENTAL TO THE PLACEMENT OF THE NEW LINER.
34. SUBMITTALS ASSOCIATED WITH THE GEOSYNTHETIC CLAY LINER AND HDPE ARE REQUIRED AND SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO COMMENCING PLACEMENT OF THE LINER SYSTEM. THESE INCLUDE:
 - FOR HDPE
 - THE ORIGIN (RESIN SUPPLIER'S NAME, RESIN PRODUCTION PLANT), IDENTIFICATION (BRAND NAME, NUMBER) AND PRODUCTION DATE OF THE RESIN.
 - A COPY OF THE QUALITY CONTROL CERTIFICATES ISSUED BY THE RESIN SUPPLIER NOTING RESULTS OF DENSITY AND MELT FLOW INDEX.
 - REPORTS ON THE TESTS CONDUCTED BY THE MANUFACTURER TO VERIFY THE QUALITY OF THE RESIN USED TO MANUFACTURE THE GEOMEMBRANE ROLLS ASSIGNED TO THE CONSIDERED FACILITY (THESE TESTS SHOULD INCLUDE RESIN DENSITY (ASTM D792 METHOD A OR ASTM D1505) AND MELT FLOW INDEX (ASTM D1238 CONDITION 190/2, 191)).
 - HDPE MANUFACTURER'S QUALITY ASSURANCE/EQUALITY CONTROL (QA/QC) CERTIFICATIONS TO VERIFY THAT THE MATERIALS SUPPLIED FOR THE PROJECT ARE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION.
 - FOR GCL
 - GCL MANUFACTURER'S QA/QC CERTIFICATIONS TO VERIFY THAT THE MATERIALS SUPPLIED FOR THE PROJECT ARE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION.

34. CONTRACTOR SHALL PROVIDE PROJECT ENGINEER WITH A PRE-CONSTRUCTION TOPOGRAPHIC SURVEY, COMPLETED BY A NEW MEXICO PROFESSIONAL LICENSED SURVEYOR, WITHIN 10 DAYS AFTER THE NOTICE TO PROCEED HAS BEEN ISSUED.
35. CONTRACTOR SHALL PROVIDE PROJECT ENGINEER WITH A PRE-LINER TOPOGRAPHIC SURVEY, COMPLETED BY A NEW MEXICO PROFESSIONAL LICENSED SURVEYOR PRIOR TO COMMENCING THE INSTALLATION OF THE LINER SYSTEM.
36. CONTRACTOR IS RESPONSIBLE FOR FURNISHING THE PROJECT ENGINEER AND/OR CLIENT WITH TESTING REPORTS OBTAINED/CERTIFIED BY A GEOTECHNICAL ENGINEERING COMPANY IN A TIMELY MANNER AND PRIOR TO THE COMMENCEMENT OF THE NEXT PHASE OF THE PROJECT.
37. NMED SW8 HAS PROVIDED A CONSERVATIVE ESTIMATE OF THE NUMBER OF SOILS TESTS REQUIRED, BY 20.8.4.14.B(3) NMAC, AND REFLECTS FROM THE BORROW SOURCE (SUBGRADE SOILS) STANDARD PROCTOR (3), GRAIN SIZE (14), DENSITY AND MOISTURE CONTENT BY NUCLEAR MOISTURE-DENSITY GAUGE (28), TOTAL THICKNESS (7), AND BORROW SOURCE TESTING FOR THE PROTECTIVE SOIL CUSHION LAYER GRAIN SIZE (29), LABORATORY PERMEABILITY (6 - BORROW SOURCE, 4 - IN-PLACE), TOTAL THICKNESS (36).
38. IN ACCORDANCE WITH REQUIREMENTS OF 20.9.4.13E(3)(B) NMAC, THE SURFACE OF THE SOIL UPON WHICH THE GEOSYNTHETIC LINER WILL BE INSTALLED MUST BE FREE OF STONES GREATER THAN 1/2-INCH IN ANY DIMENSION, ORGANIC MATTER, LOCAL IRREGULARITIES, PROTRUSIONS, LOOSE SOIL, AND ANY ABRUPT CHANGES IN GRADE THAT COULD DAMAGE THE GEOSYNTHETIC LINER.
39. ALL DRAWINGS USE THE FOLLOWING DETAIL AND SECTION CALLOUT CONVENTION:



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
PROTECTIVE SOIL LAYER	1.000	1.000	327931.89 Sq. Ft.	23755.24 Cu. Yd.	23754.98 Cu. Yd.	<FILL>

By: _____ Date: _____ Description: _____

ENTERPRISE PRODUCTS OPERATING, L.L.C.
 WYOMING SPCC
 TAOS REGIONAL LANDFILL
 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 NOTES

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 TAOS COUNTY, NEW MEXICO
 NOTES

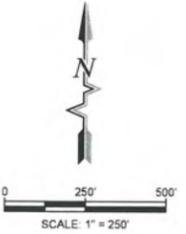
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Designed	MJP	Drawn	AB	Checked	SAM
Date	October 2025				
Scale	Horizontal: N/A				
Vertical	N/A				
Project No.	4230627				
Sheet	12				



To Request a Line-Locate Dial Box

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.



Point Table				
Point #	Elevation	Northing	Easting	Description
300	7072.91	1983510.59	678187.74	FOUND #4 REBAR
301	7053.82	1981946.08	679648.61	FOUND SPIKE
302	7068.52	1981422.50	680187.80	FOUND 1/2" ALUMINUM CAP STAMPED "TBM 26019"
8004	7091.16	1983125.00	680970.51	FOUND #4 REBAR
8005	7073.74	1983630.44	678207.04	FOUND #4 REBAR WITH CAP STAMPED "SIG CONTROL"
8383	7072.81	1981640.28	681009.72	FOUND #4 REBAR WITH CAP STAMPED "SMA CONTROL"
8387	7069.62	1982804.61	679912.22	FOUND #4 REBAR WITH CAP STAMPED "SMA CONTROL"
8388	7069.60	1983097.61	679639.98	FOUND #5 REBAR
8391	7093.21	1983753.82	680346.10	FOUND #5 REBAR
8392	7081.35	1983462.46	680620.07	FOUND #5 REBAR
8393	7091.60	1983170.98	680894.03	FOUND #5 REBAR
8394	7091.92	1982858.99	681146.09	FOUND #5 REBAR
8395	7085.74	1982567.62	681420.06	FOUND #5 REBAR
8888	7058.36	1981713.04	679912.79	FOUND 1/2" ALUMINUM CAP STAMPED "TBM 26015"
8889	7055.56	1982003.52	679637.79	FOUND 1/2" ALUMINUM CAP STAMPED "TBM 26015"
8890	7060.04	1982293.99	679362.82	FOUND 1/2" ALUMINUM CAP STAMPED "TBM 26015"
8891	7063.06	1982584.51	679087.81	FOUND 1/2" ALUMINUM CAP STAMPED "TBM 26015"
8893	7064.22	1982880.09	678818.26	FOUND #4 REBAR WITH CAP STAMPED "SMA CONTROL"
8904	7078.24	1982514.68	680187.85	FOUND #4 REBAR WITH CAP STAMPED "SMA CONTROL"
9004	7090.55	1984732.35	679455.09	FOUND #5 REBAR WITH CAP STAMPED "HV 28"

Rev #	Date	Description	By	Check

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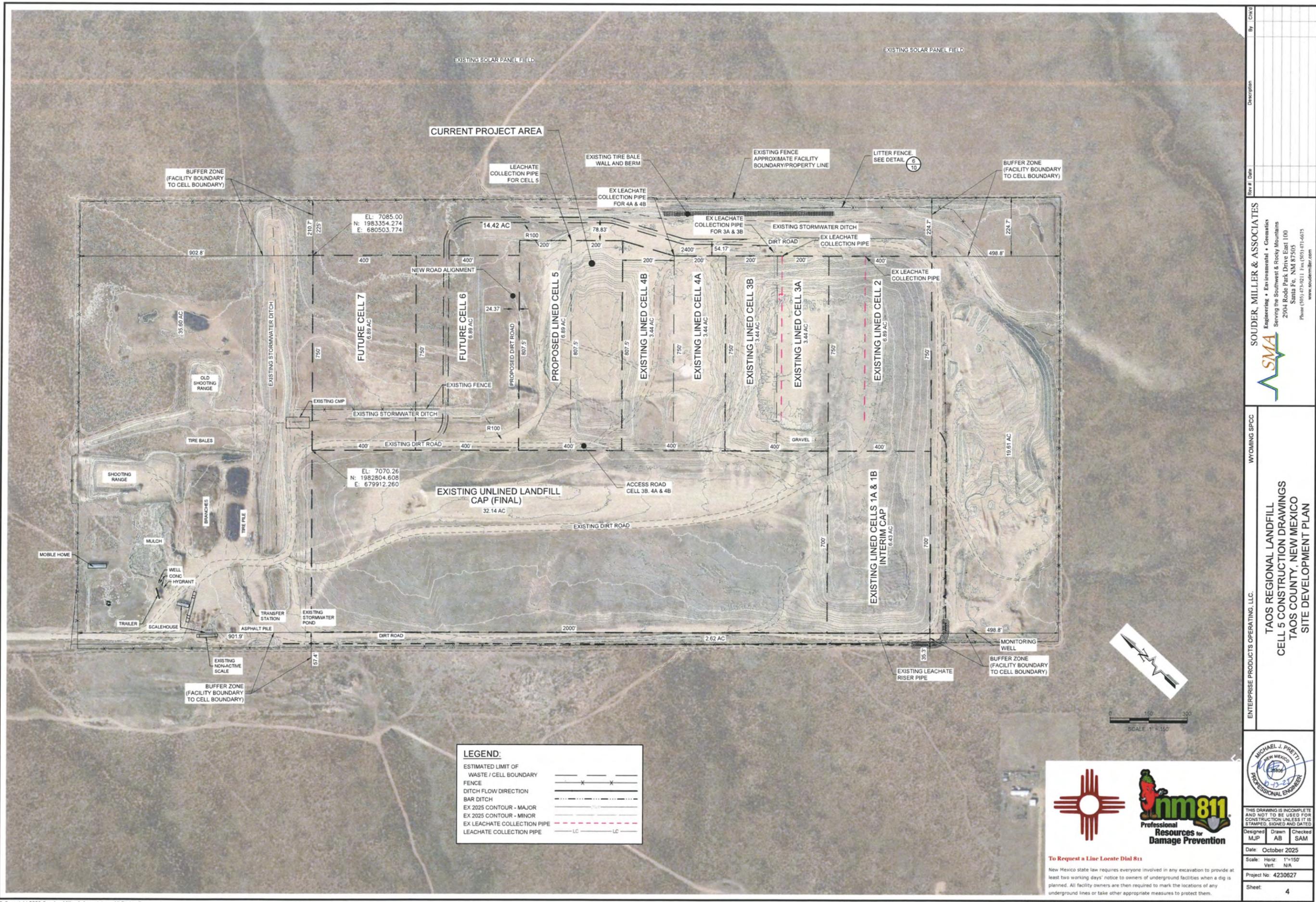
ENTERPRISE PRODUCTS OPERATING, LLC.
 WYOMING SPCC
 TAOS REGIONAL LANDFILL
 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 SURVEY CONTROL PLAN



To Request a Line Locate Dial 811

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

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Designed	Drawn	Checked
MJP	AB	SAM
Date:	October 2025	
Scale:	Horiz: N/A Vert: N/A	
Project No:	4230627	
Sheet:	3	



LEGEND:

ESTIMATED LIMIT OF WASTE / CELL BOUNDARY	--- * ---
FENCE	--- * ---
DITCH FLOW DIRECTION	--- * ---
BAR DITCH	--- * ---
EX 2025 CONTOUR - MAJOR	--- * ---
EX 2025 CONTOUR - MINOR	--- * ---
EX LEACHATE COLLECTION PIPE	--- * ---
LEACHATE COLLECTION PIPE	--- * ---

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 TAOS COUNTY, NEW MEXICO
 SITE DEVELOPMENT PLAN

ENTERPRISE PRODUCTS OPERATING, LLC.
 WYOMING SPCC
 TAOS REGIONAL LANDFILL
 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 SITE DEVELOPMENT PLAN

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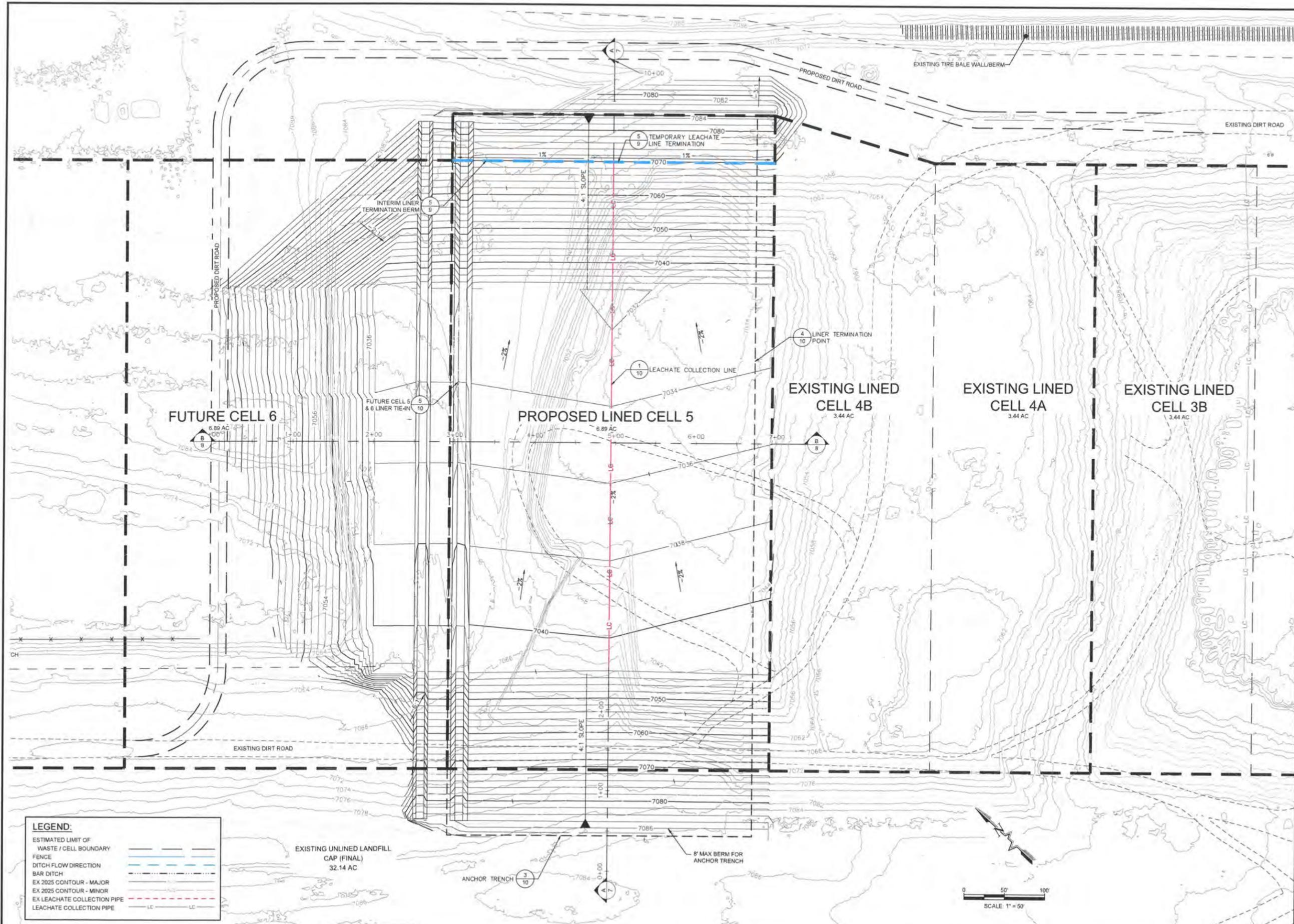
Designed	MJP	Drawn	AB	Checked	SAM
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Date: October 2025
 Scale: Horiz: 1"=150'
 Vert: N/A
 Project No: 4230627
 Sheet: 4



To Request a Line Locate Dial 811

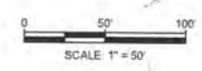
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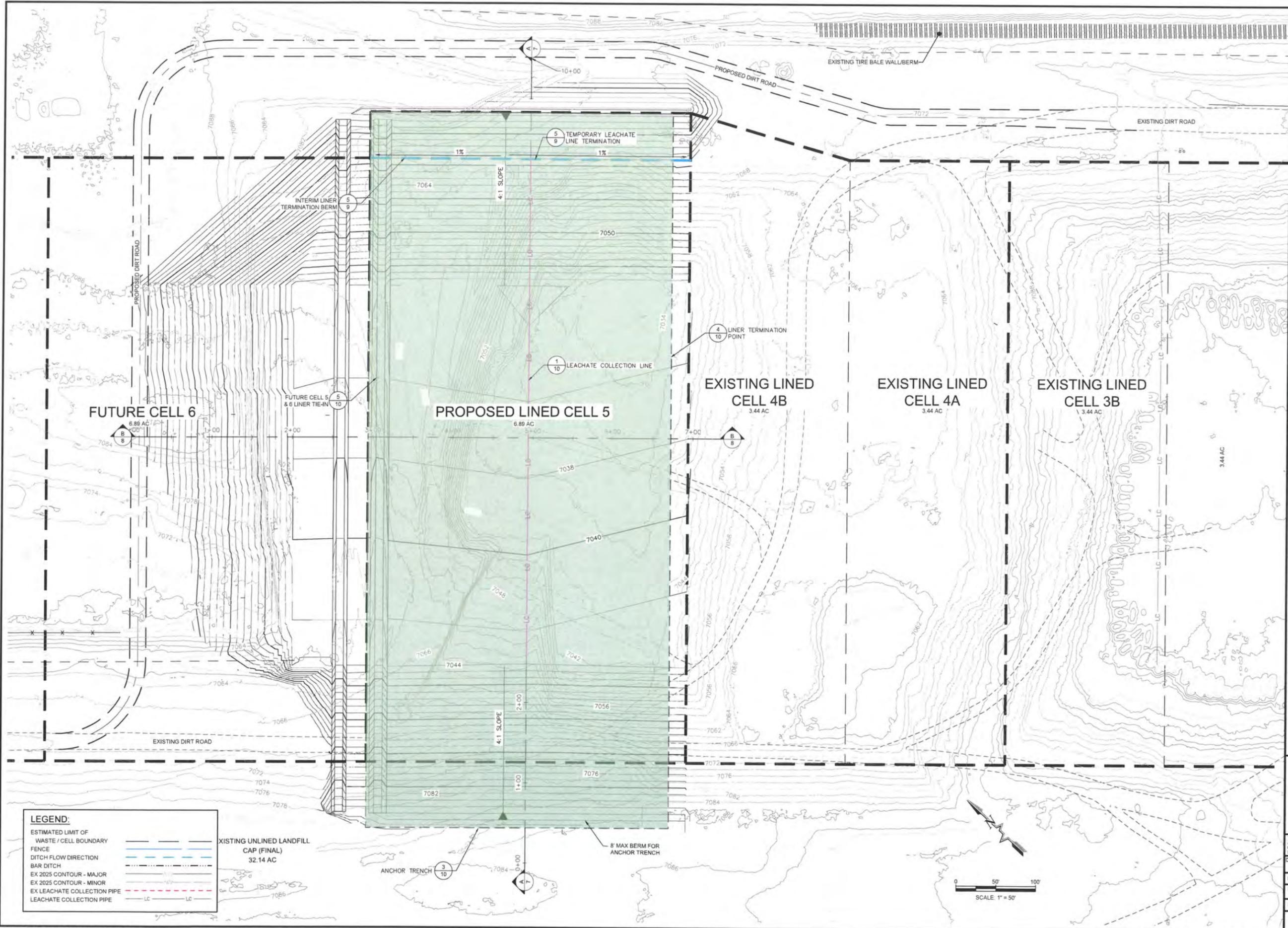
LEGEND:

ESTIMATED LIMIT OF WASTE / CELL BOUNDARY	
FENCE	
DITCH FLOW DIRECTION	
BAR DITCH	
EX 2025 CONTOUR - MAJOR	
EX 2025 CONTOUR - MINOR	
EX LEACHATE COLLECTION PIPE	
LEACHATE COLLECTION PIPE	

EXISTING UNLINED LANDFILL
CAP (FINAL)
32.14 AC



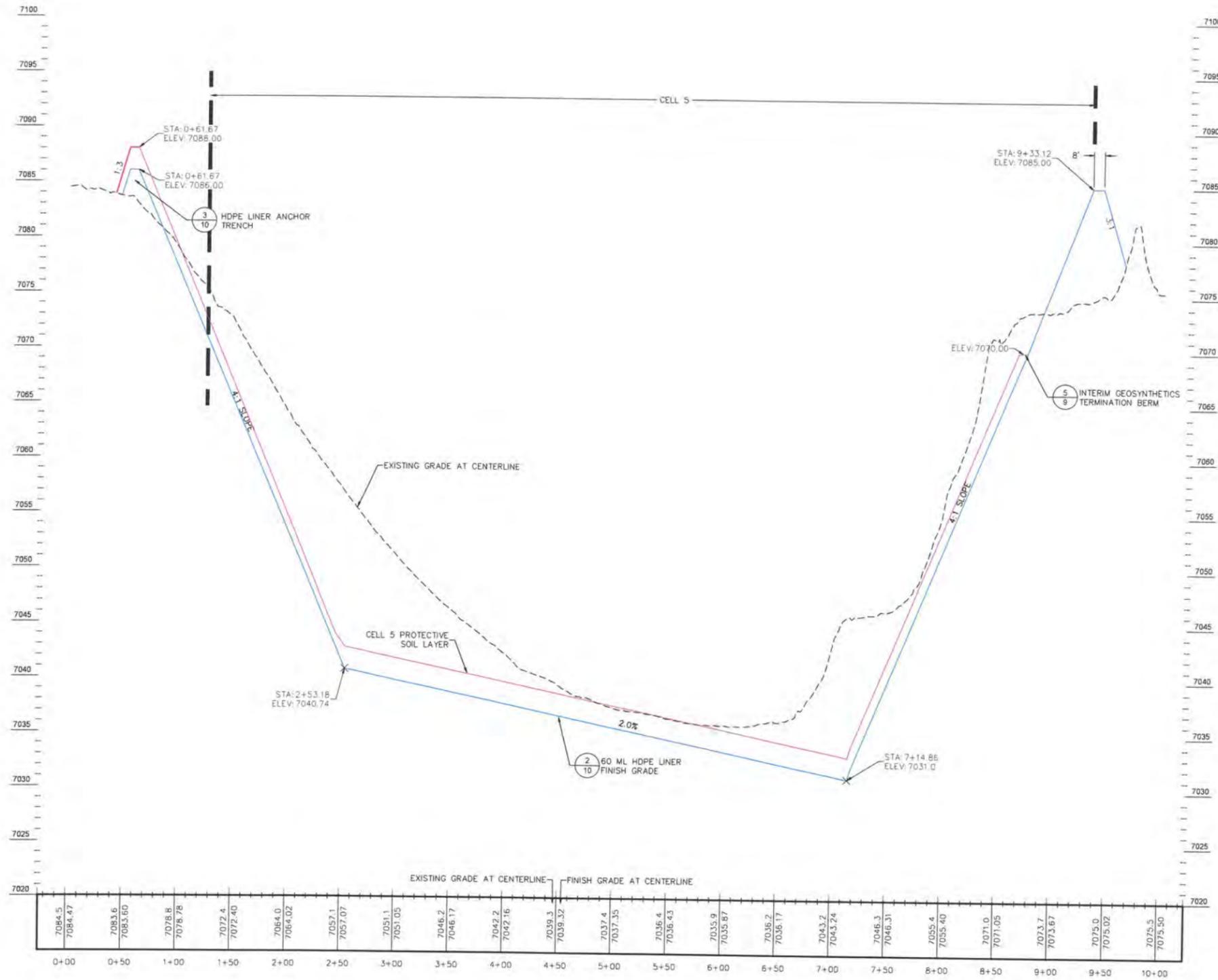
 SMA Engineering • Environmental • Geomatics Serving the Southwest & Rocky Mountains 2904 Rode Park Drive East 100 Santa Fe, NM 87505 Phone (505) 473-9211 Fax (505) 471-6675 www.soudermiller.com	SOUDER, MILLER & ASSOCIATES Engineering • Environmental • Geomatics Serving the Southwest & Rocky Mountains 2904 Rode Park Drive East 100 Santa Fe, NM 87505 Phone (505) 473-9211 Fax (505) 471-6675 www.soudermiller.com
	ENTERPRISE PRODUCTS OPERATING, LLC. WYOMING-SPCC TAOS REGIONAL LANDFILL CELL 5 CONSTRUCTION DRAWINGS TAOS COUNTY, NEW MEXICO GRADING PLAN (TOP OF SUBGRADE)
 MICHAEL J. PRETTI NEW MEXICO PROFESSIONAL ENGINEER	THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED Designed MJP Drawn AB Checked SAM Date: October 2025 Scale: Horiz 1"=50' Vert: N/A Project No: 4230627 Sheet: 5



LEGEND:

ESTIMATED LIMIT OF WASTE / CELL BOUNDARY	---	EXISTING UNLINED LANDFILL CAP (FINAL)	---
FENCE	---	32.14 AC	
DITCH FLOW DIRECTION	---		
BAR DITCH	---		
EX 2025 CONTOUR - MAJOR	---		
EX 2025 CONTOUR - MINOR	---		
EX LEACHATE COLLECTION PIPE	---		
LEACHATE COLLECTION PIPE	---		

By: Date: Description:
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<p>ENTERPRISE PRODUCTS OPERATING, L.L.C. WYOMING SPOC TAOS REGIONAL LANDFILL CELL 5 CONSTRUCTION DRAWINGS TAOS COUNTY, NEW MEXICO PROTECTIVE SOIL LAYER (PSL) PLAN</p>
<p>MICHAEL J. PRETTI NEW MEXICO 0-13-23 PROFESSIONAL ENGINEER</p>
<p>THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED</p>
<p>Designed: MJP Drawn: AB Checked: SAM</p>
<p>Date: October 2025 Scale: Horiz: 1"=50' Vert: N/A Project No: 4230627 Sheet: 6</p>



- NOTES:**
- CONTRACTOR TO EXTEND CELL 5 LINER ON TOP OF CLOSED CELL SOUTH OF CELL 5.
 - CONTRACTOR TO LOCATE AND TIE BOTH HDPE AND GCL IN TO EXISTING LINER OF CELL 4B.

LEGEND

- EX GROUND - 2025
- CELL LINER
- PROTECTIVE SOIL LAYER

PROFILE SECTION A-A
 SCALE HORIZ. 1" = 50 FT
 VERT. 1" = 10 FT

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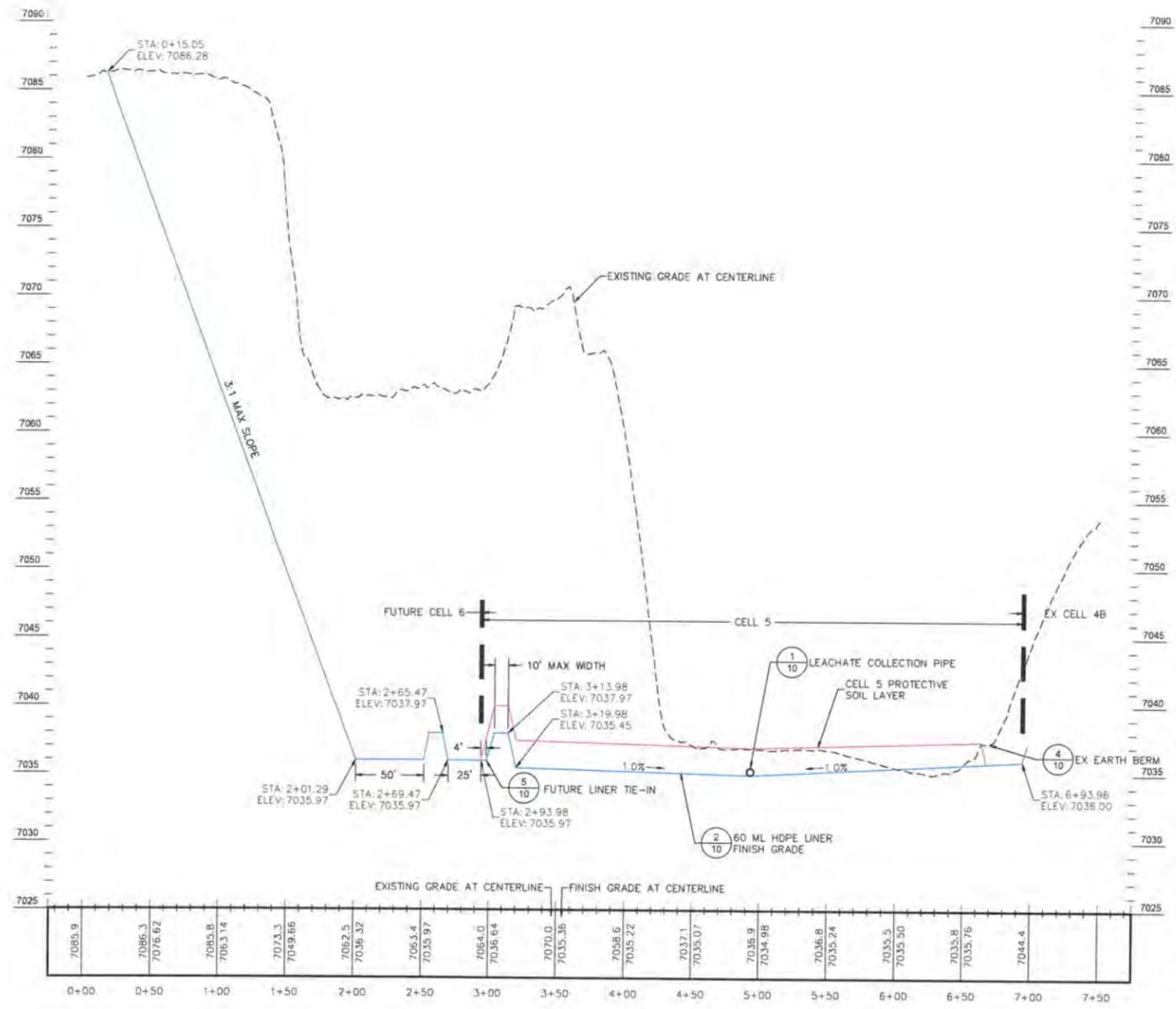
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 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 SECTION CELL 5 - ALIGNMENT A



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Designed	Drawn	Checked
MJP	AB	SAM

Date: October 2025
 Scale Horiz: 1"=50'
 Vert: N/A
 Project No: 4230627
 Sheet: 7



PROFILE SECTION B-B
 SCALE HORIZ 1" = 50 FT
 VERT. 1" = 10 FT

- NOTES:**
1. CONTRACTOR TO EXTEND CELL 5 LINER ON TOP OF CLOSED CELL SOUTH OF CELL 5.
 2. CONTRACTOR TO LOCATE AND TIE BOTH HDPE AND GCL IN TO EXISTING LINER OF CELL 4B.

LEGEND

- EX GROUND - 2025
- CELL LINER
- PROTECTIVE SOIL LAYER

Rev #	Date	Description	By	Check

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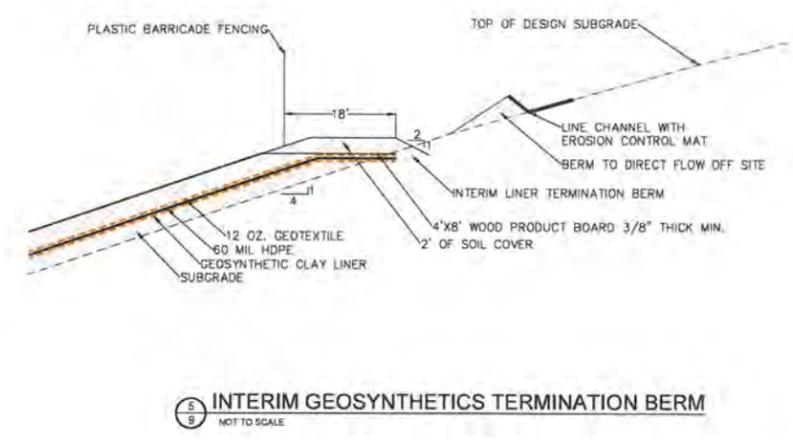
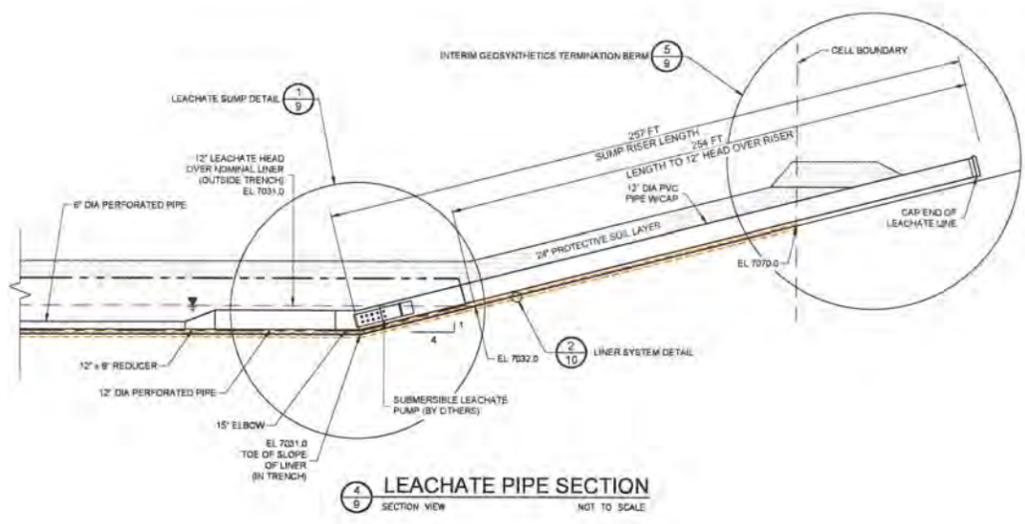
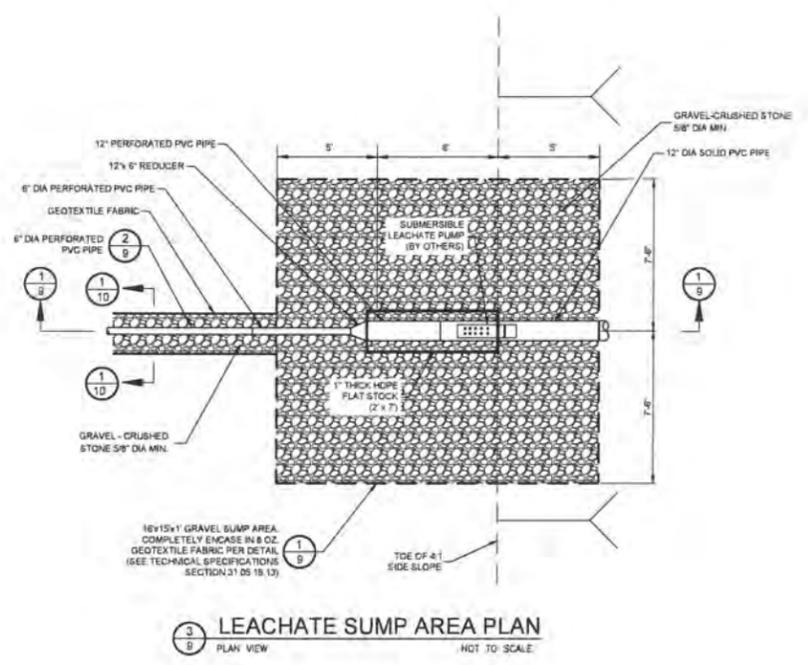
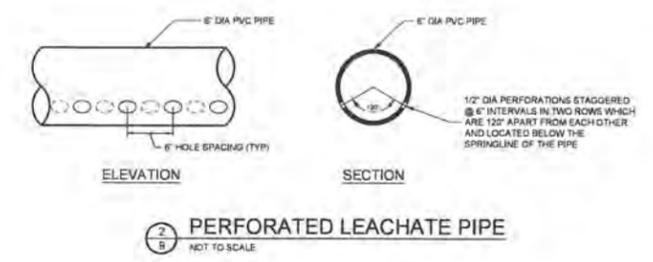
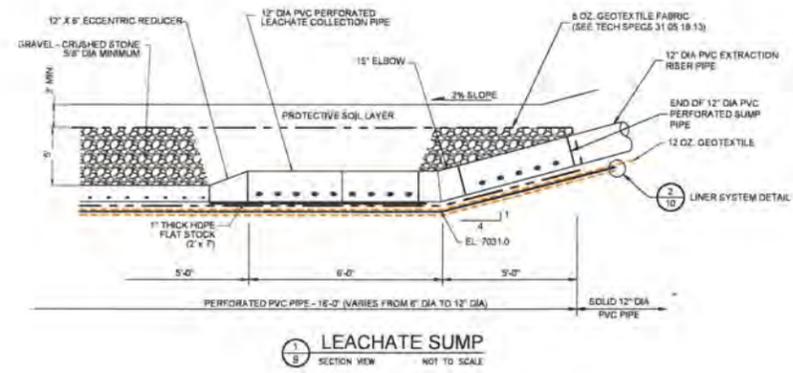
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 TAOS COUNTY, NEW MEXICO
 SECTION CELL 5 - ALIGNMENT B

MICHAEL J. PRETTI
 NEW MEXICO
 10-12-21
 PROFESSIONAL ENGINEER

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Designed	MJP	Drawn	AB	Checked	SAM
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Date: October 2025
 Scale Horiz: 1"=50'
 Vert: N/A
 Project No: 4230627
 Sheet: 8



Rev #	Date	Description	By

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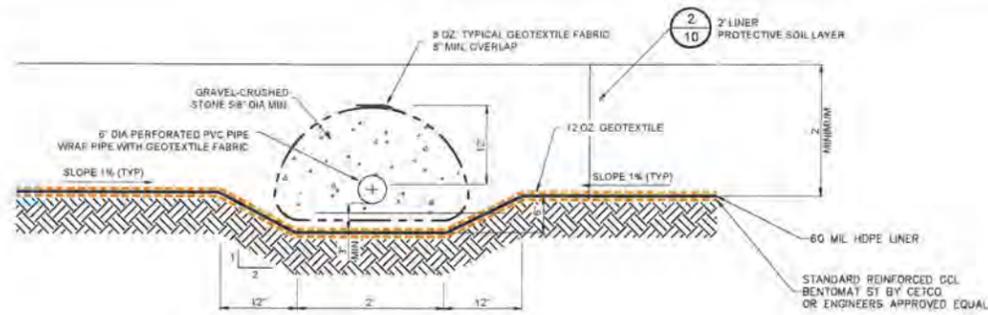
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 ENTERPRISE PRODUCTS OPERATING, L.L.C.
 TAOS REGIONAL LANDFILL
 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 LEACHATE COLLECTION SYSTEM DETAILS



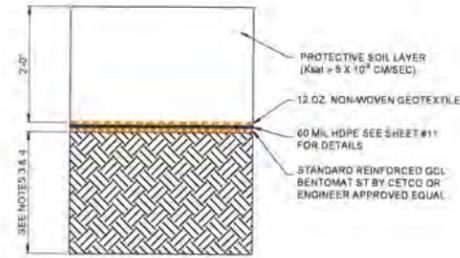
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Designed MJP	Drawn AB	Checked SAM
Date October 2025	Scale N/A	Vert. N/A
Project No. 4230627		
Sheet 9		



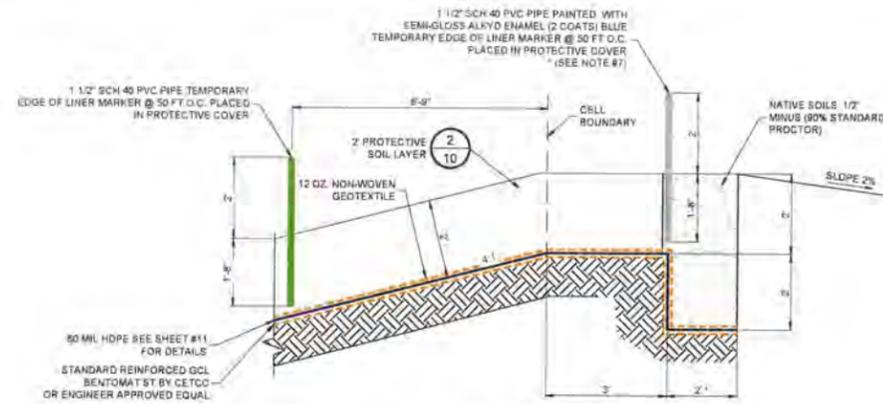
To Request a Line Locate Dial 811
 New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.



1 LEACHATE TRENCH AND PIPE SECTION VIEW NOT TO SCALE

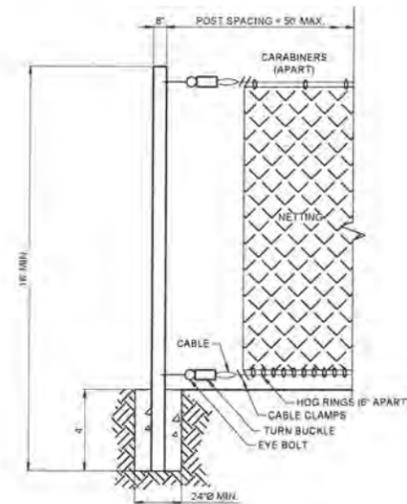


2 TYPICAL LINER SECTION DETAIL SECTION VIEW NOT TO SCALE

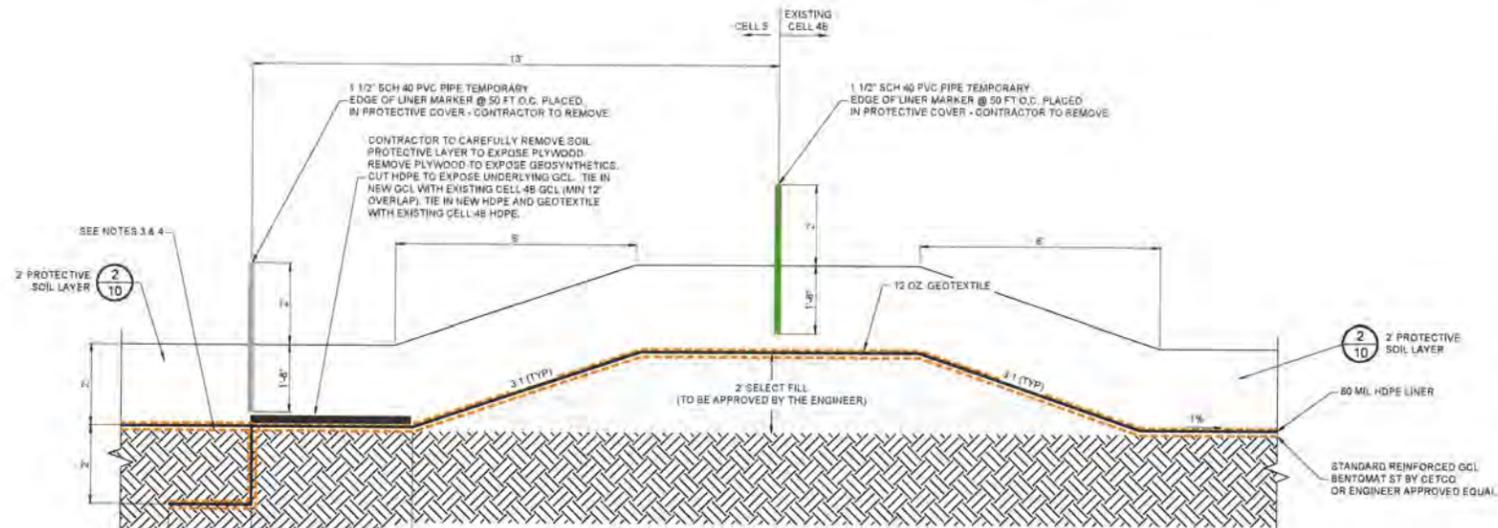


3 ANCHOR TRENCH DETAIL SECTION VIEW NOT TO SCALE

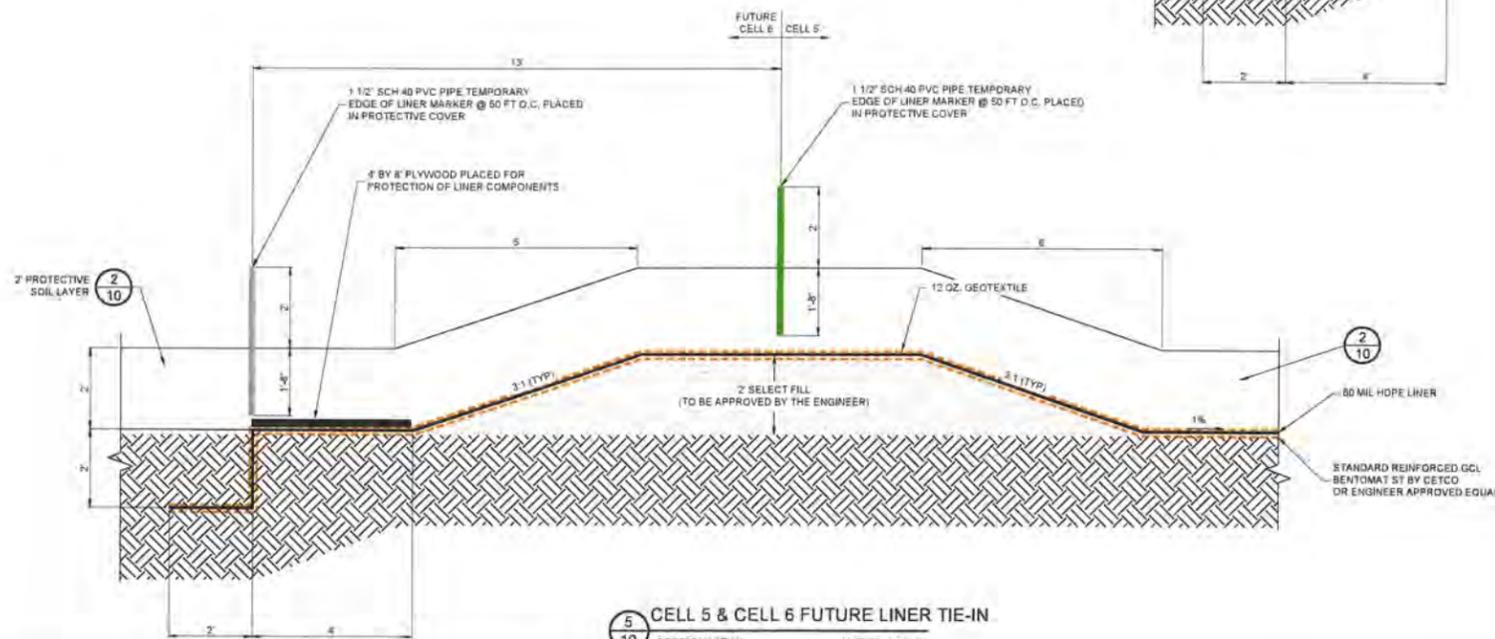
NOTE: SOIL BACKFILL SHALL BE COMPACTED AND GRADED TO DRAIN STORMWATER AWAY FROM THE ANCHOR TRENCH.
 GEOSYNTHETICS TO EXTEND TO FAR SIDE OF ANCHOR TRENCH.



6 LITTER FENCE DETAIL SECTION VIEW NOT TO SCALE



4 CELL 4B & CELL 5 LINER TIE-IN SECTION VIEW NOT TO SCALE



5 CELL 5 & CELL 6 FUTURE LINER TIE-IN SECTION VIEW NOT TO SCALE

NOTES:

- TEXTURED HDPE SHALL BE USED ON ALL SLOPES STEEPER THAN 10:1 (H:V) WITH VERTICAL RISE OF 10 FT. OR GREATER.
- SMOOTH HDPE SHALL BE USED ON ALL SLOPES LESS THAN 10:1 (H:V).
- EARTH SURFACE UPON WHICH THE GCL & HDPE LINER ARE TO BE INSTALLED SHALL MEET COMPACTION REQUIREMENTS CONSISTING OF A MINIMUM 8 INCH LAYER OF IN-SITU SOIL OR SELECT FILL COMPACTED TO 90% STANDARD PROCTOR DENSITY. ALL SUBGRADE PREPARATION SHALL CONFORM TO NMAC SECTIONS 20.9.4.13E (3a) & (3b).
- ANY OVER-EXCAVATION AND RE-COMPACTING REQUIRED TO MEET GEOTECHNICAL REQUIREMENTS WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO SEPARATE PAYMENT WILL BE MADE THEREFORE. SEE NMAC SECTION 20.9.4.13E(3a).
- THE 2 FOOT TOP PROTECTIVE SOIL LAYER SHALL CONFORM TO NMAC SECTION 20.9.4.
- TESTING AND QUALITY CONTROL TO CONFORM TO THE CONSTRUCTION QUALITY ASSURANCE PLAN (CQA) AS APPROVED BY NMED SOLID WASTE BUREAU IN ACCORDANCE WITH NMAC SECTION 20.9.4.14.
- TEMPORARY MARKERS PLACED IN PROTECTIVE SOIL LAYER DURING PLACEMENT OF SAID PROTECTIVE LAYER AND NOT DRIVEN INTO SOIL AFTER PLACEMENT OF PROTECTIVE LAYER. CONTRACTOR TO MAINTAIN MIN. OF 2" CLEARANCE BETWEEN BOTTOM OF TEMPORARY MARKER AND HDPE LINER TO ENSURE THAT THE LINER IS NOT PUNCTURED OR COMPROMISED BY THE TEMPORARY MARKER.



To Request a Liner Locate Dial 811

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By: [Signature]

Revised: [Date]

WYOMING SPCC

ENTERPRISE PRODUCTS OPERATING, L.L.C.

TAOS REGIONAL LANDFILL
 CELL 5 CONSTRUCTION DRAWINGS
 TAOS COUNTY, NEW MEXICO
 LINER INSTALLATION DETAILS

SOUDER, MILLER & ASSOCIATES
 Engineering • Environmental • Geomatics
 Serving the Southwest & Rocky Mountains
 2904 Road Park Drive East 100
 Santa Fe, NM 87505
 Phone: (505) 873-9211 Fax: (505) 471-6075
 www.soudermlr.com

Professional Engineer
 MICHAEL J. PRETTI
 NEW MEXICO
 10-13-21

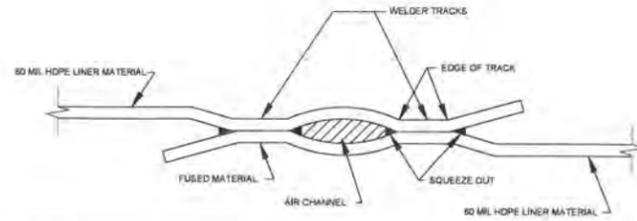
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	MJP	Drawn	AB	Checked	SAM
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Date: October 2025
 Scale: Horiz: N/A
 Vert: N/A
 Project No: 4230627
 Sheet: 10

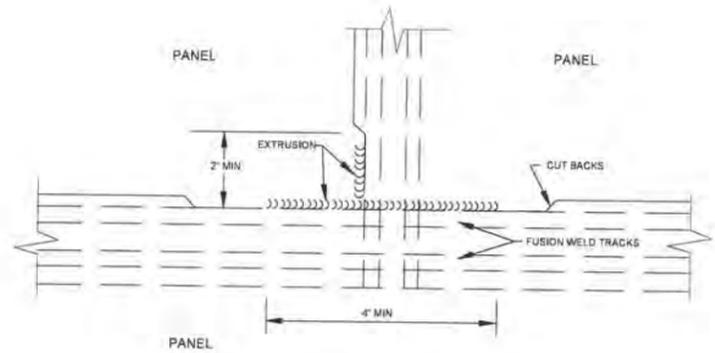
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10/20/2025 1:30 PM

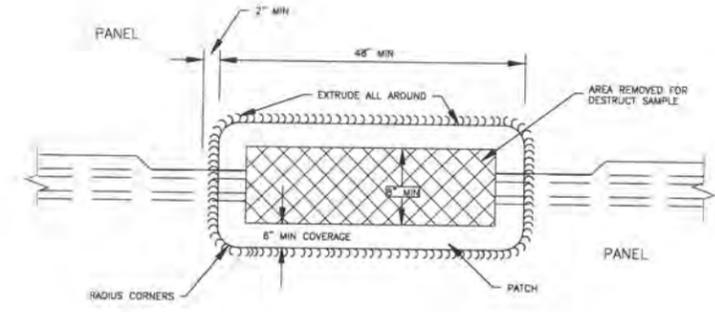


- NOTES**
1. EDGE OF TRACKS NOT TO CUT THE LINER.
 2. AIR CHANNEL SHOULD BE CLEAR.
 3. BOTH WELDER TRACKS SHALL BE EQUAL WIDTHS.
 4. SQUEEZE OUT SHOULD BE MINIMAL IN ALL 4 LOCATIONS WHEN VIEWED IN THE TEST CROSS-SECTION.

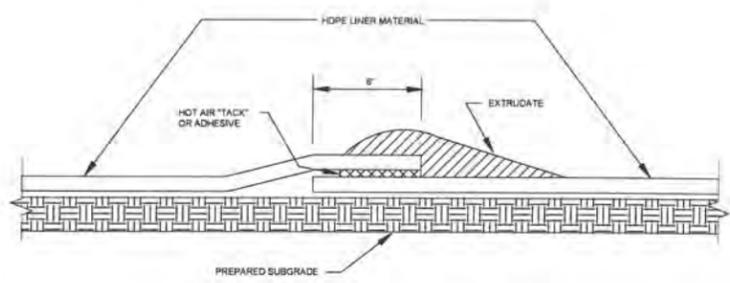
1
11 TYPICAL FUSION WELD
SECTION VIEW NOT TO SCALE



2
11 TYPICAL "T" AT BUTT SEAM
PLAN VIEW NOT TO SCALE

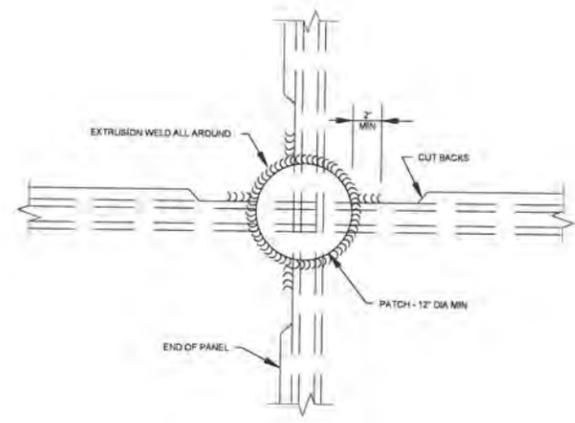


3
11 TYPICAL DESTRUCT SAMPLE PATCH
PLAN VIEW NOT TO SCALE



4
11 TYPICAL EXTRUSION WELD
SECTION VIEW NOT TO SCALE

NOTE: MIN. 6" OVERLAP ON ALL EXT. WELD SEAMS



5
11 TYPICAL PATCH AT PANEL END
PLAN VIEW NOT TO SCALE

- GEOMEMBRANE LAYOUT NOTES:**
1. LINER PANEL EXTENDING OVER LEACHATE COLLECTION TRENCH DECREASES ABOUT 1 FT. IN WIDTH DUE TO THE TRENCH SIDE SLOPE CONFIGURATION.
 2. LINER PANEL DOUBLE FUSION WELD SEAMS SHALL NOT BE LOCATED CLOSER THAN 5.0 FT. TO ANY LEACHATE LATERAL IN A PARALLEL DIRECTION.
 3. A MAXIMUM 8" OVERLAP IS REQUIRED AT EACH DOUBLE FUSION WELD SEAM. TYPICAL PANEL DIMENSION NOT INCLUDING OVERLAP IS 22.5 FT. (LENGTH VARIES).
 4. SEAMS SHALL NOT BE ORIENTED PERPENDICULAR TO THE DIRECTION OF SLOPE.
 5. ALL VERTICAL PANELS PLACED ON SLOPED SURFACES SHALL EXTEND 5 FEET INWARD FROM THE TOE OF SLOPE OR EDGE OF TRENCH.
 6. LINER TRENCH ANCHORS ARE LOCATED APPROXIMATELY 2 FEET PAST THE CREST OF LINER SIDE SLOPE. TEMPORARY ANCHOR TRENCHES ARE LOCATED AT THE WESTERN TRANSITIONAL AREA OF CELL 5.

- NOTES:**
1. CONTRACTOR TO JOIN/WELD LINER PER MANUFACTURER RECOMMENDATION. DRAWINGS AS SHOWN ARE FOR INFORMATION PURPOSES ONLY.
 2. LINER TO MEET REQUIREMENTS OF NMAC 20.9.4.13 FOR DESIGN AND NMAC 20.9.4.14 FOR TESTING.

Rev #	Date	Description

SOUDEY, MILLER & ASSOCIATES
 Engineering • Environmental • Geomatics
 Serving the Southwest & Rocky Mountains
 2904 Rodeo Park Drive East 1100
 Santa Fe, NM 87505
 Phone: (505) 473-8211 Fax: (505) 471-4678
 www.soudermiller.com

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 TYPICAL DETAILS

MICHAEL J. PRETTI
 NEW MEXICO
 10-13-20
 PROFESSIONAL ENGINEER

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