NM1 - ___66_____

Operational Infrastructure and Cell E-1 Construction Certification Report

1 of 4

July 2022

North Ranch Surface Waste Management Facility:
Cell E-1 and Operational Infrastructure Construction Certification Report

Lea County, New Mexico

Prepared for:

High Roller - EPC
1008 Southview Circle
Center, TX 75935

Prepared by:

SCS ENGINEERS

01222034.00 | July 15, 2022
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SECTION 1 INTRODUCTION

1.0 PURPOSE

This Construction Quality Assurance (CQA) Certification Report has been prepared by SCS Engineers and CQA Solutions, Ltd. for the NGL Waste Services, LLC North Ranch Surface Waste Management Landfill Cell E-1 and Operational Infrastructure construction project located in Lea County, New Mexico.

The purpose of this report is to present documentation illustrating the following:

- The Work has been performed in substantial compliance with the Contract Documents, approved submittals, and the design intent of the portion of Work relating to earthwork, geosynthetic and concrete components of the facility.
- The required CQA program of documentation and verification was complete and accurate.
- General compliance with New Mexico Administrative Code Title 19, Chapter 15, Part 36 and the Surface Waste Management Facility Permit Conditions NM1-66 (and associated permit modifications)

1.1 PROJECT ORGANIZATION

1.1.1 Owner & Project Manager

The North Ranch Surface Waste Management Facility (NRSWMF) Cell E-1 and associated operational infrastructure components are owned by NGL Waste Services, LLC of Denver, Colorado who has complete responsibility for the project.

The General Contractor and Project Manager for the construction acting as the owner's representative was High Roller EPC

- High Roller's project manager was Ravi Vemulapalli.
- High Roller's on-site superintendent was Travis Clarke.

For the purposes of this report High Roller shall be referred to as the Owner's Representative and is located at 1008 Southview Circle, Center, TX 75935.

1.1.2 CQA Consultant

1.1.2.1 Design Engineer, CQA Certifying Engineer, and Manager

The Design Engineer of Record, CQA Certifying Engineer and Manager for all project components except for structural concrete design and construction is Michael Bradford, P.E (NM# 19240). Mr. Bradford is an engineer for SCS Engineers and was responsible for design of the project, addressing design related requests for information, material submittal review and approval, managing the CQA program, providing direct oversight of onsite CQA Monitoring activities, and project certification. Mr. Bradford and SCS Engineers assumes all duties and responsibilities, and had the rights and authority assigned to those roles as defined in the Contract Documents in connection with the completion of the Work not including structural concrete engineering, design, and certification in accordance with the Contract Documents.

The Design Engineer and Engineer of Record for all structural components is Ravi Vemulapalli, P.E. (NM# 24730). Mr. Vemulapalli is an engineer with High Roller EPC. Mr. Vemulapalli and High Roller EPC assumes all duties and responsibilities, and had the rights and authority assigned to those roles as defined in the Contract Documents in connection with the completion on only structural concrete engineering, design, and certification Work in accordance with the Contract Documents.

For the purposes of this report SCS Engineers shall be referred to as the Engineer (or SCS) and is located at 6100 South Maple Ave, Suite 118, Tempe, AZ, 85283. Mr. Vemulapalli will be referred to as the Structural Engineer.

1.1.2.2 CQA Monitor

CQA Solutions, Ltd. (CQAS) was contracted by SCS as the Construction Quality Assurance (CQA) Monitor for the earthwork, geosynthetics and concrete portions of the Work. The CQA Monitor was responsible for implementing the CQA program of construction verification procedures. The CQA Monitor provided a full time CQA technician on site during relevant Work. All CQA Documentation for the project was reviewed, evaluated, and approved by SCS.

The site CQA inspector for this project was Xavier Smith. The CQAS Project Manager was Brent Duganiero. Resumes for the CQA personnel are in Appendix A: Resumes.

For purposes of this report, CQAS shall be referred to as the CQA Monitor and is located at: 723A Phillips Avenue, Toledo, OH 43612

1.1.2.3 CQA Laboratories

During the course of the project, three different third-party laboratories were utilized;

1. Pettigrew & Associates (Pettigrew) performed pre-qualification testing for soil components at the onset of the project. Pettigrew is located at 100 E Navajo Dr, Hobbs, NM 88240.
2. Beyond Engineering & Testing (Beyond) performed pre-qualification testing for soil and aggregate components, assisted with on-site soil moisture/density testing and performed all concrete field and laboratory testing. Beyond is located at 706 North Main Street, Carlsbad, NM 88220.
3. TRI Environmental, Inc. (TRI) performed conformance testing of the geosynthetic materials and the destructive seam sample testing. TRI is located at 9063 Bee Caves Rd, Austin, TX 78733.

Resumes for Beyond personnel performing site construction observation and testing are found in Appendix A: Resumes.

Material pre-construction conformance testing is in Appendix B: Pre-Construction Material Testing.

1.1.2.4 CQA Surveyor

The surveying was completed by Trans Global Services, LLC (TGS). TGS is located at 201 West Wall St Suite 325 Midland, TX 79701

The field as-built drawings show approximate panel location, panel numbers and repair locations.

Survey data submitted by TGS was reviewed and approved by SCS. As-built Record Drawings and Survey data relevant to the scope of the report is provided within Appendix C: Survey Data.

1.1.3 Earthworks Contractor

High Roller EPC contracted T5 Construction (T5) as the Soil Contractor responsible for the earthworks and piping in accordance with the Contract Documents.

For the purposes of this report T5 shall be referred to as the Contractor and is located at 23977 N Farm to Market 95, Garrison, TX 75946.

1.1.4 Geosynthetics Installer

High Roller EPC contracted liner installer for the Work was Mustang Extreme Environmental Services (Mustang) and was contracted by High Roller to install the geosynthetic portion(s) of the Work in accordance with the Contract Documents and approved submittals.

For the purposes of this report Mustang shall be referred to as the Installer and is located at 5049 Edwards Ranch Road, Suite 240, Fort Worth, Texas 76109.

1.1.5 Geosynthetics Manufacturer

All liner materials (GCL, Geomembrane, Geocomposite and Geotextile) was manufactured by Solmax.

2.0 PROJECT LOCATION & DESCRIPTION

2.1 PROJECT LOCATION

North Ranch Disposal Facility is located approximately 16 miles west of Jal, New Mexico and consists of two standalone tracts. The NRSWMF is approximately 303 acres in size and is located within Section 9 and 10 of T25S, R34E. This project was specifically to construct Disposal Cell E-1, the leachate evaporation pond, concrete waste management areas, and supporting infrastructure.

2.2 SCOPE OF WORK

The project goals for the Project were to construct landfill Cell E-1 and operational infrastructure.

The 2022 construction scope of the Work was as follows:

- Cell E-1 (approximately 3.6 acres)
- Drying Pad West: (approximately 0.4 acres)
- Drying Pad East: (approximately 0.4 acres)
- Truck Wash: (approximately 0.2 acres)
- Leachate Pond (approximately 1.2 acres)

The focus of this report is based solely on the earthwork, concrete and geosynthetics installation phase(s) for each of the above components excluding the access roads.

T5 mobilized for construction in January 2022 (prior to CQA Monitor mobilization, to perform activities not requiring CQA certification and therefore not included within the scope of this Report). Full-time CQA presence at the site commenced on February 3, 2022 and continued in multiple phases throughout construction until completion of the Work ended on June 7, 2022. It should be noted that other construction activities continued on-site after the CQA Monitor demobilized. These activities did not require CQA certification and are not included within the scope of this report.

2.3 CONTRACT DOCUMENTS

The following documents were used for the installation and for the support of information for the construction and creation of this Report:

- Drawings for the Cell E-1 and Operational Infrastructure Construction, Issued for Construction, dated February 16, 2022
- Construction Quality Assurance Plan, dated September 2019 and amended March 2022 to include provisions for concrete CQA
- Technical Specifications, dated August 2021

SECTION 2 DOCUMENTATION

1.0 CONSTRUCTION MONITORING AND OVERSIGHT

All relevant construction and related activities were monitored, documented and/or audited to verify compliance with the Contract Documents. A full time CQA Monitor was on site at all times during the earthwork, concrete construction, and geosynthetics installation portions of the Work. Daily duties performed on site included:

- Construction activity observation, monitoring, and reporting.
- Photographic records documentation.
- Material inventory documentation.
- Product installation observation, inspection, and documentation.
- Construction and Installation verification testing and reporting.

The CQA Monitor verified all installation materials were approved by the certifying engineer prior to use, construction methods and practices were performed in accordance with the specifications, and third-party CQA testing was performed in accordance with the specifications and/or CQA Plan. The CQA Monitor also provided all related field documentation as outlined and contained in this report.

2.0 DOCUMENTATION

2.1 CQA DAILY FIELD REPORTS

Daily Field Reports (DFR) were prepared daily by the CQA Monitor. These reports organized and summarized all construction activities, CQA verification procedures, CQA testing, and quality control completed during the day. The daily summary reports contained the following information:

- Title block containing the project name, project location, date, and summary report number.
- Description of weather conditions including range of temperature readings, cloud cover, and precipitation.
- Summary of the day's on-going construction activities including equipment, personnel, and subcontractors utilized and identification of areas in which the construction was taking place.
- Summary of CQA verification procedures implemented during construction. This summary included construction monitoring, construction verification testing, and the Contractor's and Installer's quality control procedures.
- Summary of CQA product verification testing results.
- Problems identified (if any) and resolutions.

- Areas of non-conformance for substandard work and corrective action measures.
- Summary of off-site materials received.
- Record of site visitors, if any.
- Photographs with descriptions.

Daily Summary Reports that document all construction activity are found in Appendix D: CQA Daily Field Reports.

2.2 CQA TRACKING, TESTING AND VERIFICATION FIELD RECORDS

Construction activities, CQA procedures, laboratory testing, and construction testing were recorded on appropriate tracking, testing, and summary forms. CQA Monitors used the following field construction and laboratory testing forms for this project:

Earthwork:

1. Density Test Log
2. Lift Maps

Geosynthetics:

1. Pre-project Geosynthetic Materials Inventory Form
2. Subgrade Acceptance For
3. Geomembrane Deployment Record
4. Geomembrane Trial Welding Record
5. Geomembrane Seaming Record
6. Geomembrane Destructive Seam Sample Record
7. Geomembrane Repair Record
8. Geomembrane Non-destructive Seam Test Record
9. Post-project Geosynthetic Materials Inventory Record

The complete set of CQA field documentation are in Appendix H: CQA Field Reports.

2.3 PHOTOGRAPHIC RECORD

Photographs of construction activities were taken daily by the CQA Monitor

A comprehensive photo record is contained within the Daily Field Reports in Appendix D: CQA Daily Field Reports.

2.4 RECORD CONTROL

Construction activity documentation was recorded in the field on hard copy forms/logs and then scanned to digital pdf files. Original hard copies were secured in a temporary field binder and later sent back to the home office for reproduction and distribution. Original project submittals were submitted electronically directly to the Engineer for review and approval.

2.5 RECORD ARCHIVES

Hard copy documentation generated during the project was delivered back to the CQA Monitor's home office for the project archives. Electronic documentation generated for the project was saved on a local hard drive then uploaded to a secure cloud sharing hard drive via the internet. These files were downloaded by the home office and saved to the company's secured network. Printed copies were then generated and filed in the project archives. All relevant documents were distributed with this Certification Report to the appropriate organizations involved with this project.

SECTION 3 CONSTRUCTION QUALITY ASSURANCE PROGRAM

1.0 PROGRAM OBJECTIVES

The following are the Construction Quality Assurance (CQA) program objectives:

Review and Approve.

Review and approve submittals to verify construction materials, procedures and personnel complied with the Contract Documents and approved submittals. This task was performed by the Engineer. Approved submittals and other data were forwarded to the CQA Monitor for use in the field during construction.

On-site Presence.

Providing on site personnel with real-time construction monitoring, inspecting, and verification testing were performed during all phases relevant to the certification of the project. This task was performed by the CQA Monitor throughout the course of the project. At times, Beyond assisted in various tasks as needed. The Engineer also visited the site at the completion of major milestones to observe progress and inspect complete work to help ensure quality assurance.

Documentation.

Providing a high-quality program of verification procedures, checks and reviews to facilitate the goals outlined in the Contract Documents and CQA Plan to ensure design objectives were fulfilled. This task was performed in the field during construction by the CQA Monitor. The documentation was quality checked prior to submittal to The Engineer who then performed the final full review of the documentation.

1.1 MATERIAL SUBMITTALS

Material submittal review and archiving was the responsibility of the Engineer. They were reviewed by the Engineer and when requested reviewed by the CQA Monitor for compliance/concurrence with the Contract Documents listed in this Report. Submittals are located within Appendix E: Submittals.

1.2 REQUEST FOR INFORMATION (RFI)

At various times during the project, RFIs were generated by the contractor and submitted to the Engineer to clarify questions related to the design or Contract Documents. RFIs were reviewed and responded to by The Engineer.

Final approved RFIs are in Appendix F: Request for Information (RFI).

1.3 VERIFICATION

1.3.1 Construction Testing

Construction verification testing was performed on installed or constructed components to verify compliance with the Contract Documents. Construction verification testing was performed by the Installer, the CQA Monitor, or by off-site testing laboratories as required by the Contract Documents. Construction testing data was recorded on CQA field forms appropriate for the task and can be found in Appendix H: CQA Field Reports.

1.3.2 Equipment Calibrations

The nuclear densitometer for the earthwork construction and the tensiometer for the geosynthetics installation both required calibrations.

Nuclear Densitometer

There were two different densitometers (portable nuclear density gauge) used on this project to test the in-place soil moisture content and density during construction.

1. Manufacturer: CPN, Model: MC1 DRP, Serial #: 8825: This densitometer was used by the CQA Monitor and was calibrated by InstroTek, Inc. on January 01, 2022. Next calibration was due on January 28, 2023 (after the completion of the Project). A copy of the calibration certificate is in Appendix G: Equipment Calibrations.

Tensiometer

A tensiometer with a single calibrated load cell was used by Mustang to perform on-site field testing of peel and shear samples for both trial welds and destructive seam samples throughout the geomembrane installation. Although one tensiometer was used, there were two load cells.

1. Load Cell Model Number: M2405-750#, Serial Number: 666584: This load cell was calibrated on April 23, 2021, by DemTech Services, Inc. This calibration expired on April 23, 2022, during the project however was replaced prior to expiration by the load cell mentioned in #2 below. A copy of the calibration certificate is in Appendix G: Equipment Calibrations.

2. Load Cell Model Number: M2404-750#, Serial Number: 688141 was calibrated by DemTech Services, Inc. on January 28, 2022, and was used throughout the remainder of the project. A copy of the calibration certificate is found in Appendix G: Equipment Calibrations.

SECTION 4: CONSTRUCTION MATERIALS

1.0 INTRODUCTION

This section describes the materials used for the construction of the project:

- Soil
- Aggregate
- Geomembrane
- Geosynthetic Clay Liner (GCL)
- Geocomposite
- Geotextile
- HDPE embedment strips / PolyLock
- Structural Concrete

1.1 SOILS & AGGREGATES:

On site-soil borrow areas (from areas requiring cut) were utilized for all the fill material throughout the project.

1.1.1 Sampling:

The CQA Monitor arrived on site on February 18, 2022, to collect soil material samples to ship to a third-party laboratory for pre-construction conformance testing. There were three main soil types to be used for this project:

1. General Fill (2 samples collected)
2. Structural Fill (3 samples collected)
3. Protective Cover (3 samples collected)
4. Collection Stone (1 sample collected)

At the on-set of the project, Pettigrew & Associates performed the third-party laboratory however due to scheduling issues the lab was changed to Beyond Engineering & Testing part-way through the project.

1.1.2 General Fill

General Fill (samples identified with a "GF" prefix) is material that is to be used for fill to bring areas up to design grade, but does not require structural strength (i.e. will not supporting waste, liquid, concrete pad, roadway, etc.). This material consisted of relatively native excavated soils that are free of debris, foreign objects, large rock fragments, roots, and organics and no materials larger than six inches was allowed.

The following laboratory tests were performed on the general fill material:

1. ASTM D698 Standard Proctor
2. ASTM D698 Atterberg

Laboratory test results were reviewed and approved by the Engineer and are in Appendix B: Pre-Construction Material Testing.

1.1.3 Structural Fill

Structural Fill (samples identified with a "SF" prefix) is material used for fill to bring areas up to design grade and will be structural support for another material and/or component, (i.e. will not supporting waste, liquid, concrete pad, roadway, etc.).

These areas include:

- The perimeter berm of Cell E-1 and the Contact Pond.
- Fill used to create the supporting subgrade for the Concrete Pad
- Fill that will support the delineated Caliche Road, especially at the entrance way and ramp into the cell (not within the scope of this Report)
- Fill under the area that will hold the scales and scale house (not within the scope of this Report)

The structural fill material consisted of relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments, roots, and organics, particle size of 3-inch minus, and classified according to the Unified Soil Classification System (USCS) as SP, SW, SM, SC, ML, CL, CH, or MH material.

The following laboratory tests were performed on the general fill material:

1. ASTM D2487 USCS Classification
2. ASTM D4318 Atterbergs
3. ASTM 422 Gradations
4. ASTM D698 Standard Proctor

5. ASTM D1557 Modified Proctor

Laboratory test results were reviewed and approved by the Engineer and are in Appendix B: Pre-Construction Material Testing.

1.1.4 Protective Cover

Protective cover (samples identified with a "PC" prefix) is the drainage aggregate to be placed over the geosynthetic layer within Cell E-1.

The Protective Cover material is screened to a 3-inch maximum diameter with all vegetative/organic materials and debris removed.

The following laboratory tests were performed on the Protective Cover:

1. ASTM D422 Gradation
2. ASTM D2487 USCS Classification

The requirement for ASTM D2434 Hydraulic Conductivity testing of the protective cover material was removed per NRSWMF Permit NM1-66 Condition 6.L, and is in general compliance with minor permit modification approved by the New Mexico Energy, Minerals and Natural Resources Department – Oil Conservation Division dated June 15, 2022.

Laboratory test results were reviewed and approved by the Engineer and are in Appendix B: Pre-Construction Material Testing.

1.1.5 Collection Stone (Aggregate)

Collection Stone materials were sourced and provided by the Geosynthetics Installer. Collection Stone (samples identified with a "CS" prefix) is the aggregate used within the leachate collection trenches and leachate collection and leak detection sumps of Cell E-1, and the leak detection sumps of the Leachate Pond, drying pads and truck wash pad.

The following laboratory tests were performed on the collection stone:

1. ASTM D2487 USCS Classification
2. ASTM D422 Gradation
3. ASTM D437 Calcium Carbonate Content
4. ASTM D2434 Hydraulic Conductivity

Laboratory test results were reviewed and approved by the Engineer and are in Appendix B: Pre-Construction Material Testing. Note that the collection stone material used did not pass the minimum requirements for Calcium Carbonate Content. However, due to limited availability of a rock which would meet these criteria within a reasonable economic distance to the project this variance was waived by the Engineer.

1.2 GEOSYNTHETICS

This project installed geosynthetic materials equivalent to the geosynthetics materials prescribed in the NRSWMF Permit document. Namely geosynthetic clay liner (or GCL), 60-mil double sided textured high density polyethylene (HDPE) membrane (or geomembrane), and 200-mil double-sided geonet/geotextile drainage composite (or geocomposite). These materials were installed at the permit prescribed locations in the prescribed cross-section.

1.2.1 Geosynthetic Clay Liner (GCL)

Prior to GCL installation, the Engineer performed CQA verification and approval of the following:

- GCL material submittals verifying compliance with the Contract Documents. The Manufacturer product information sheets are available within Appendix B: Pre-Construction Material Testing.
- GCL manufacturer's quality control (MQC) testing. The MQC certificates are available within Appendix B: Pre-Construction Material Testing.
- Material Conformance Testing as described within the construction documents were performed by the Geosynthetics Laboratory. Laboratory test results are included within Appendix B: Pre-Construction Material Testing.

GCL was delivered to the site beginning on April 04, 2022 and continuing periodically as needed. Material was offloaded from the flatbed trucks by the Earthworks Contractor and stockpiled on site according to the manufacturer's recommendations. Observation of the offloading and stockpiling was performed by the CQA Monitor. An inventory list of delivered materials was developed by the CQA Monitor which was cross checked against the list of approved materials provided by the Engineer.

1.2.2 Geomembrane

The geomembrane used for construction was 60-mil HDPE with double sided texturing and smooth welding strips along the machine edges. Prior to geomembrane installation, the Engineer performed CQA verification and approval of the following:

- Reviewed geomembrane submittals verifying compliance with the Contract Documents. The Manufacturer product information sheets are available within Appendix B: Pre-Construction Material Testing.
- Geomembrane manufacturer's quality control (MQC) testing. The MQC certificates are available within Appendix B: Pre-Construction Material Testing.

- Material Conformance Testing as described within the construction documents were performed by the Geosynthetics Laboratory. Laboratory test results are included within Appendix B: Pre-Construction Material Testing.
- An inventory list of delivered materials was developed by the CQA Monitor which was cross checked against the list of approved materials provided by the Engineer.

1.2.3 Geocomposite

Prior to geomembrane installation, the Engineer performed CQA verification and approval of the following:

- Reviewed geocomposite submittals verifying compliance with the Contract Documents. The Manufacturer product information sheets are available within Appendix B: Pre-Construction Material Testing.
- Geocomposite manufacturer's quality control (MQC) testing. The MQC certificates are available within Appendix B: Pre-Construction Material Testing.
- Material Conformance Testing as described within the construction documents were performed by TRI. Laboratory test results are included within Appendix B: Pre-Construction Material Testing.

  An inventory list of delivered materials was developed by the CQA Monitor which was cross checked against the list of approved materials provided by the Engineer.

1.3 CONCRETE

Concrete was used as the primary containment barrier for both the Drying Pads and the Truck Wash. The concrete mix design was provided by Lea County Concrete and was reviewed and accepted by the Structural Engineer prior to use. During concrete pouring, the concrete laboratory (Beyond) supplied a technician to perform field slump and air content testing, and to collect cylinder samples for laboratory strength testing. Beyond provided field and laboratory testing results to the Structural Engineer for review and approval. Laboratory test results are included within Appendix I: Concrete Laboratory Testing Results.

SECTION 5: CONSTRUCTION COMPONENTS

1.0 CONCRETE DRYING PADS AND TRUCK WASH PAD

1.1 INTRODUCTION

The East and West Drying Pads, (each approximately 17,000 square feet) and the Truck Wash Pad (approximately 11,000 SF) are located at the southeastern corner of the work area. These pads are comprised of the following layers: (from the bottom up):

1. Existing native soil
2. Added fill (6" of which was a prepared subgrade for the geosynthetic layers)
3. 8 oz Geotextile for Drying Pads (replaces reinforced GCL design per RFI #3); Reinforced GCL for the Truck Wash
4. Secondary geomembrane (60-mil HDPE)
5. Geocomposite
6. Primary geomembrane (60-mil HDPE)
7. Geotextile
8. Drainage layer with leachate collection pipe
9. Concrete pad

1.2 EARTHWORK CONSTRUCTION

Prior to fill operations, the in-situ (existing) material was proof rolled. The proof roll was performed with a loaded articulating truck and was observed by the CQA Monitor. No areas of non-conforming materials were observed.

Fill material was placed on top of the existing native soil within the various Pads as needed to bring it up to the required elevations. A total of three (3) lifts were constructed and tested at the East and West Drying Pads; and a total of two (2) lifts were constructed and tested at the Truck Wash Pad.

During fill operations, approved material was hauled via articulating haul trucks from the borrow area. The designated borrow area was from within Cell E-1 as it was excavated to reach design elevations. The fill material was spread within the East Drying Pad with a CAT D6 bulldozer equipped with GPS to maintain lift control into approximate 10-inch loose lifts. The material was then moisture conditioned and compacted by a CAT CP56B Compactor.

Upon completion of the compaction, each lift was tested via a calibrated portable nuclear density gauge (CPN Model MCI-DRP) at a frequency of twelve (12) tests per acre per constructed lift. The calibration certificate is in Appendix: Equipment Calibrations.

To meet the specified requirements, a combination of modified and standard proctors was utilized. For tests utilizing the Standard Proctor, a minimum compaction of 95% Maximum Dry Density (MDD) and a moisture range of +/- 2% of the Optimum Moisture (OM) was required. For tests utilizing the Modified Proctor, a minimum compaction of 92% Maximum Dry Density (MDD) and a moisture range of +/-3% of the Optimum Moisture (OM) was required.

Density Test Logs and corresponding Lift Map Sketch from each respective Pad can be found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad

Laboratory proctor data is located within Appendix B: Pre-Construction Material Testing.

1.3 PREPARED SUBGRADE

Upon completion of the earthwork activities, the subgrade for the geosynthetics was prepared by scarifying the top 6-inches, moisture conditioning as needed and smooth drum rolling to prepare a smooth layer for the geosynthetics to lay on. No density testing was required on the 6-inch prepared subgrade.

The prepared subgrade was surveyed by the CQA Surveyor, and the elevations were approved by the Engineer.

The prepared subgrade was visually inspected by the CQA Monitor prior to any geosynthetic material placement. Any identified conditions that did not conform to the Contract Documents were corrected by the Earthworks Contractor.

Upon completion of the subgrade inspection, a Subgrade Acceptance Form was signed by the CQA Monitor and the Geosynthetics Installer. All parties visually examined the subgrade surface to ensure no deleterious materials or materials that would potentially damage the geomembrane system were present in the areas to be covered. This included a visual inspection for rocks, yielding soils, moisture content, structural abnormalities, or any deleterious materials on the geosynthetic lining surface. Subgrade surface approval was made before any geosynthetics were deployed over any surface.

The signed Subgrade Acceptance Forms for the three Pads can be found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad, respectively.

1.4 GEOSYNTHETIC CLAY LINER (GCL)

Per original design (see Detail A:9PL) GCL was to be installed directly on top of the prepared subgrade however per RFI 3, the GCL was replaced with an 8-oz geotextile. This revision applies only to the East and West Drying Pads.

RFI 3 can be found in Appendix F: Request for Information (RFI).

At the Truck Wash Pad only, the reinforced GCL was installed directly on top and in intimate contact with the prepared subgrade within the Truck Wash Pad. The GCL was deployed via a spreader bar attached to a skid steer with an overlap of 6-inches on the machined edges and 24-inches on the cross-machine edges. Bentonite was applied to the seam area prior to overlapping. Seams were heat bonded using a hot air gun.

Repairs to the GCL were performed as needed using a GCL patch which was a minimum of twelve (12) inches overlapped beyond the damage and hot air bonded to the parent sheet.

No CQA field data sheets were required for the GCL installation.

1.5 GEOTEXTILE

At the East and West Drying Pads, an 8-oz non-woven, needle-punched geotextile was installed directly on top of the prepared subgrade within the footprint of the drying pad.

During geotextile installation, the CQA Monitor performed the following general construction quality assurance verification procedures:

- Verified geotextile was installed in accordance with the Contract Documents.
- Verified geotextile was installed with sufficient tension to prevent excessive wrinkles and folds.

The geotextile was overlapped and stitched together. All repairs were heat-bonded with a hot-air device.

No CQA field documentation forms were required for the installation of the geotextile.

1.6 SECONDARY 60-MIL HDPE GEOMEMBRANE

1.6.1 Deployment

All Secondary (bottom) geomembrane panels were deployed with a spreader bar attached to a skid-steer stationed off the geotextile and pulled by hand and were installed directly on top of and with intimate contact with the geotextile. Upon deployment, each panel was labeled with an identification number with the prefix of “S” (secondary).

Deployment of the Secondary geomembrane occurred on March 27, 2022.

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.
- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.

In total, approximately 17,000 SF of Secondary Geomembrane was deployed within the East and West Drying Pads, and ~11,000 SF of Secondary Geomembrane was deployed within the Truck Wash Pad.

Deployment of the geomembrane panels was recorded on the Geomembrane Deployment Log and a field sketch was drawn for each pad which can be found respectively in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.
- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.

- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record and Tensiometer Calibration Certificate(s) for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.3 Fusion Seaming

All secondary production seams were thermally welded using a dual-track fusion machine.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations, geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.
- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 658, 650, and 329 lineal feet of panel seaming was fusion welded at the East Drying Pad, West Drying Pad, and Truck Wash Pad, respectively. There was no secondary extrusion welding for panel seaming at either of the Drying Pads.

All field documentation for the secondary seaming activities was recorded on the Seam Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period

of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified all leaks identified were repaired in accordance with the contract documents.

All non-destructive testing was documented on the Non-destructive Seam Test Record for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500-foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seams met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. The field and laboratory sections were destructively tested for peel and shear.

A total of 4 destructive samples were marked on the secondary welding in each of the Drying Pads, and 2 destructive samples were marked on the secondary welding in the Truck Wash Pad.

The locations of these samples were recorded on the Destructive Seam Test Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI. All laboratory tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory test results for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.6 Repairs

During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.

- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.
- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.
- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.
- Verified field-fabrication of geomembrane boots around pipe penetrations. There was one (1) pipe boot installed at the East and West Drying Pads. This was a temporary boot until the concrete was poured. After the concrete pour, this was replaced with a permanent boot. The final permanent boot was non-destructively tested via the Holiday Spark test method. At the Truck Wash Pad both the secondary and primary HDPE layers were booted around the 4" HDPE SDR-9 leak detection riser pipe in accordance with Contract Documents. The boots were extrusion welded to the geomembrane layers and non-destructively tested.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the secondary repair activities was recorded on the Repair Log which can be found in Appendix H-1: CQA Field Records - East Drying Pad.

1.6.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure of 1 to 4 psi via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a minimum dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.6.8 Sump Test

The CQA Plan Section 2.7.3, Second Paragraph Bullet #4 discusses the requirement of a sump test. Per RFI-9, this requirement was waived in lieu of the appropriate non-destructive air-testing and vacuum testing as well as destructive seam testing on the secondary and primary geomembrane layers.

RFI-9 can be found in Appendix F: Request for Information (RFI).

1.7 GEOCOMPOSITE

Geocomposite was installed on top of and within the footprint of the Secondary geomembrane and was deployed by hand.

The geocomposite panels were overlapped and the geonet components were joined together with cable ties spaced every five (5) feet along the machine edges, six (six) inches within the anchor trenches and six (6) inches along the cross-machine edges.

The top geotextile components of the geocomposite panels were stitched together.

No CQA field documentation forms were required for the installation of the geocomposite.

1.8 DRAINAGE AGGREGATE

A drainage aggregate consisting of a washed, 0.5-inch minus rounded stone was installed within the sump, on top of the geocomposite.

Pre-construction laboratory testing results can be found in Appendix B: Pre-Construction Material Testing.

The aggregate was delivered to the sump with a low ground pressure 4-wheeled ATV and was hand-shoveled into the sump.

No CQA field documentation forms were required for the placement of the drainage aggregate.

1.9 GEOTEXTILE

An 8-oz non-woven, needle-punched geotextile was installed by hand directly on top of the Drainage Aggregate within the sump.

During geotextile installation, the CQA Organization performed the following general construction quality assurance verification procedures:

- Verified geotextile was installed in accordance with the Contract Documents.
- Verified geotextile was installed with sufficient tension to prevent excessive wrinkles and folds.

The textile completely overlapped the underlying drainage aggregate and was heat tacked to the underlying geocomposite.

No CQA field documentation forms were required for the installation of the geotextile.

1.10 PRIMARY HDPE GEOMEMBRANE

A 60-mil HDPE was installed directly on top of the geocomposite (or on top of the geotextile over the sump).

1.10.1 Deployment

All Primary (top layer) geomembrane panels were deployed by hand, pulling from a roll attached to a skid steer stationed off the geomembrane. Upon deployment, each panel was labeled with an identification number with the prefix of "P" (Primary).

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.
- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.
- Verified field-fabrication of geomembrane boots around pipe penetrations.
- Verified attachments to and around structures were completed.

In total, approximately 17,000 SF of Primary Geomembrane was deployed within the East and West Drying Pads, and ~11,000 SF of Primary Geomembrane was deployed within the Truck Wash Pad.

Deployment of the geomembrane panels was recorded on the Geomembrane Deployment Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.10.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, The CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.
- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.
- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

The Tensiometer Calibration Certificate(s) are found in Appendix G: Equipment Calibrations.

1.10.3 Fusion Seaming

All primary production seams were thermally welded using a dual-track fusion machine. All Secondary to Primary seams were extrusion fillet welded.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations. geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.

- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 659 lineal feet of panel seaming was fusion welded in the East Drying Pad, 650 lineal feet in the West Drying Pad, and 329 lineal feet in the Truck Wash Pad.

A total of approximately 492 lineal feet of panel seaming (primary to secondary welds) was extrusion fillet welded in the East Drying Pad, 503 lineal feet in the West Drying Pad, and ~424 lineal feet in the Truck Wash Pad.

All field documentation for the secondary seaming activities was recorded on the Seam Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.10.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

Each extrusion welded seam (primary to secondary welds) was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The extrusion welding for the pipe boots was non-destructively tested using the Holiday Spark Test Method.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified vacuum chamber and/or spark testing was completed for all extrusion welds and repairs.
- Verified all leaks identified by the above test methods were repaired in accordance with the contract documents.

All non-destructive testing is recorded on the Non-destructive Seam Test Record for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.10.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500 -foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seams met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. The field and laboratory sections were destructively tested for peel and shear.

The locations of these samples were recorded on the Destructive Seam Test Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI. All laboratory tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory test results for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.10.6 Repairs

During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.
- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.
- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.

- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the primary repair activities was recorded on the Repair Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.10.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

1.11 GEOTEXTILE

An 8-oz non-woven, needle-punched geotextile was installed directly on top of the Primary geomembrane layer.

The textile was deployed by hand (with the roll attached to a skid steer via a spreader bar which was stationed off the geomembrane. The geotextile was overlapped as necessary to join panels. Panels were joined via stitching. The installed panels and completed panel connections were visually inspected by the CQA Monitor. Geotextile patches (repairs) were thermally fused using a hot air gun.

During geotextile installation, the CQA Monitor performed the following general construction quality assurance verification procedures:

- Verified geotextile was installed in accordance with the Contract Documents.
- Verified geotextile was installed with sufficient tension to prevent excessive wrinkles and folds.

The textile completely overlapped the underlying drainage aggregate and was heat tacked to the underlying geocomposite.

No CQA field documentation forms were required for the installation of the geotextile.

1.12 HDPE PIPE

A perforated 4-inch SDR-9 HDPE leachate collection pipe was welded and installed into the leak detection layer sump and into the primary leachate collection sump over geotextile. The pipes were aligned per plan, and grades were verified via survey by TGS.

No CQA field documentation forms were required for the installation of the HDPE pipes.

1.13 CAST IN PLACE CONCRETE

1.13.1 Material

A concrete mix was submitted on April 4, 2022 by Lea County Concrete and approved by the Structural Engineer.

1.13.2 Placement

A concrete pad was placed on top of the drainage rock layer which had been placed over top of the primary geotextile. Concrete placement occurred on May 21, 2022.

1.13.3 Construction Quality Control

SCS submitted RFI 16 - Concrete Quality Control Specifications on April 27, 2022, which contained a summary of the quality control requirements for the concrete work.

Beyond ET performed the concrete quality control testing in accordance with ACI 301 at a rate of one sample per 50 cubic yards of concrete placed. For each sample taken, the following tests were performed:

1. Strength (7- and 28-day compressive strength)
2. Slump
3. Temperature
4. Air Content

Concrete test reports can be found in Appendix I: Concrete Laboratory Testing Data.

1.13.4 Concrete / Geomembrane Attachment:

Detail D:9TW shows a mechanical attachment of the geomembrane to the cast in place concrete via batten strip, however on March 23, 2022, the Engineer approved the use of Solmax Concrete PolyLock embedment strips in response to Submittal #17.

PolyLock embedment strips were installed by Lea County Concrete during the concrete pour. The secondary and primary HDPE geomembranes were extrusion welded to the PolyLock on June 02, 2022.

On May 31, 2022, the Engineer approved not non-destructively testing the extrusion weld joining the geomembrane sheet to the PolyLock embedment strip.

1.14 COMPLETION OF WORK:

CQA activities related to the West Drying Pad, East Drying Pad, and Truck Wash pertaining to the scope of this Report concluded on June 1, 2022, June 2, 2022, and July 2, 2022 respectively.

1.15 LEACHATE PUMP STATION

The waste water pumps for the truck wash station as per Detail D on drawing 10DET was submitted by the Contractor (Submittal #8) and approved by the Engineer in compliance with the specifications. Due to long vendor lead times the approved leachate pump had not arrived and been installed at the time the preparation of this report. It is the understanding of the CQA Team leachate levels will be monitored by the Operator daily and pumped manually using portable pumps until the permanent approved pumps arrive and are installed per plan. Documentation and verification of this is not within the scope of the CQA certification documentation of this report.

2.0 CELL E-1

2.1 INTRODUCTION

Cell E-1, approximately 10 acres in lined area, lies at the western half of the overall work area, is comprised of the following layers (from the bottom up):

1. Existing native soil
2. Prepared subgrade for the geosynthetic layers
3. Reinforced GCL
4. Secondary geomembrane (60-mil HDPE)
5. Geocomposite leak detection layer
6. Primary geomembrane (60-mil HDPE)
7. Geocomposite primary drainage layer with gravel and leachate collection pipe
8. 2-feet of onsite native soil as protective cover

2.2 EARTHWORK CONSTRUCTION

Fill material was placed on top of the existing native soil within Cell E-1 as needed to bring it up to the required elevations. Prior to fill operations, the in-situ (existing) material was proof rolled. The proof roll was performed with a loaded articulating truck and was observed by the CQA Monitor. No areas of non-conforming materials were observed.

The soil material above the floor of Cell E-1 was cut and removed to attain the design elevations; however, fill material was placed to construct the upper elevations of the Cell E-1 containment berms to bring them up to the required elevations. A total of fifteen (15) lifts were constructed and tested within the above grade containment berm construction. Below grade in-situ surfaces were contoured, scarified, recompacted, and rolled, however no testing was required on in-situ surfaces.

During fill operations, approved material from within the Cell E-1 excavation was hauled via articulating haul trucks and placed where required to meet design grades. Structural fill material for the containment berms was spread with a CAT D6 bulldozer with GPS into approximate 8-inch loose lifts. The material was then moisture conditioned and compacted by a CAT CP56B compactor.

Upon completion of compaction, each lift of structural fill was tested via a portable nuclear density gauge at a frequency of twelve (12) tests per acre per constructed lift. The Modified Proctor was used for all testing performed for the Cell E-1 Berms. For tests utilizing the Modified Proctor, a minimum compaction of 92% Maximum Dry Density (MDD) and a moisture range of +/-2% of the Optimum Moisture (OM) was required. Density testing on below grade cut and rolled surfaces was not required

Density testing on the Cell E-1 berms was performed on March 24, 2022, through April 8, 2022.

Density Test Logs and Lift Map Field Sketches for Cell E-1 can be found in Appendix H-4: CQA Field Records Cell E-1.

The proctor data can be found in Appendix B: Pre-Construction Material Testing.

2.3 PREPARED SUBGRADE

In general, the prepared liner subgrade was constructed, prepared and tested as needed as discussed in the previous section. The final surface was smooth rolled and inspected. The prepared subgrade was surveyed by the CQA Surveyor, and the elevations were approved by the Engineer.

The prepared subgrade was visually inspected by the CQA Monitor on April 18, 2022 through April 28, 2022, prior to any geosynthetic material placement. Any identified conditions that did not conform to the Contract Documents were corrected by the Earthworks Contractor. The prepared subgrade was surveyed by the CQA Surveyor, and the elevations were approved by the Engineer.

Upon completion of the subgrade inspection, a Subgrade Acceptance Form was signed by the CQA Monitor and the Geosynthetics Installer. All parties visually examined the subgrade surface to ensure no deleterious materials or materials that would potentially damage the geomembrane system were present in the areas to be covered. This included a visual inspection for rocks, yielding soils, moisture content, structural abnormalities, or any deleterious materials on the geosynthetic lining surface. Subgrade surface approval was made before any geosynthetics were deployed over any surface.

The signed Subgrade Acceptance Form(s) for Cell E-1 can be found in Appendix H-4: CQA Field Records - Cell E-1.

2.4 GEOSYNTHETIC CLAY LINER (GCL)

The reinforced GCL was installed directly on top of the prepared subgrade and was deployed via spreader bar on a skid steer with an overlap of 6-inches on the machined edges and 24-inches on the cross-machined edges. Bentonite was applied to the seam area prior to overlapping. Seams were heat bonded using a hot air gun.

Approximately 441,000 SF of GCL was installed from April 18, 2022, through April 28, 2022.

Repairs to the GCL were performed as needed using a GCL patch which was a minimum of twelve (12) inches overlapped beyond the damage and hot air bonded to the parent sheet.

No CQA field data sheets were required for the GCL installation.

2.5 SECONDARY 60-MIL HDPE GEOMEMBRANE

2.5.1 Deployment

All Secondary (bottom) geomembrane panels were deployed with a spreader bar attached to a skid-steer stationed off the geotextile and pulled by hand and were installed directly on top of and with intimate contact with the geotextile. Upon deployment, each panel was labeled with an identification number with the prefix of “S” (secondary).

Deployment of the Secondary geomembrane occurred on April 18, 2022, through April 28, 2022.

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.

- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.

In total, approximately 441,000 SF of Secondary Geomembrane was deployed within Cell E-1.

Deployment of the geomembrane panels was recorded on the Geomembrane Deployment Log and a field sketch was drawn which are in Appendix H-4: CQA Field Records - Cell E-1.

2.5.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.
- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.
- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record and Tensiometer Calibration Certificate(s) are found in Appendix H-4: CQA Field Records - Cell E-1.

2.5.3 Fusion Seaming

All secondary production seams were thermally welded using a dual-track fusion machine from April 18, 2022, through April 28, 2022.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations, geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.
- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 21,595 lineal feet of panel seaming was fusion welded. There was no secondary extrusion welding for panel seaming.

All field documentation for the secondary seaming activities was recorded on the Seam Log which can be found in Appendix H-4: CQA Field Records - Cell E-1.

2.5.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method from April 19, 2022, through April 30, 2022. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified all leaks identified were repaired in accordance with the contract documents.

All non-destructive testing is recorded on the Non-destructive Seam Test Record which can be found in Appendix H-4: CQA Field Records - Cell E-1.

2.5.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500-foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seams met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. The field and laboratory sections were destructively tested for peel and shear.

A total of 54 destructive samples were marked on the secondary welding from April 25 through April 30, 2022.

The locations of these samples were recorded on the Destructive Seam Test Log which is in Appendix H-4: CQA Field Records - Cell E-1.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI. All laboratory tested samples except two (2) exceeded the minimum requirements provided within the Contract Documents.

Destructive Sample CSDS29 failed laboratory testing and was bounded with CSDS29-A and CSDS29-B, both of which passed laboratory testing. All welding within the failing zone between the two bounding samples were capped.

Destructive Sample CSDS39 failed laboratory testing and was bounded with CSDS39-A and CSDS39-B, both of which passed laboratory testing. All welding within the failing zone between the two bounding samples were capped.

Laboratory test results are located within Appendix H-4: CQA Field Records - Cell E-1.

2.5.6 Repairs

Secondary geomembrane repairs were performed on April 22, 2022 through April 30, 2022. During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.
- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.

- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.
- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.
- Verified field-fabrication of geomembrane boots around pipe penetrations. There was one (1) pipe boot installed. This was a temporary boot until the concrete was poured. After the concrete pour, this was replaced with a permanent boot. The final permanent boot was non-destructively tested via the Holiday Spark test method.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the secondary repair activities was recorded on the Repair Log which can be found in Appendix H-4: CQA Field Records - Cell E-1.

2.5.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box from April 22, 2022, through April 30, 2022. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure of 1 to 4 psi via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a minimum dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log which can be found in Appendix H-4: CQA Field Records - Cell E-1.

2.5.8 Sump Test

The CQA Plan Section 2.7.3, Second Paragraph Bullet #4 discusses the requirement of a sump test. Per RFI-9, this requirement was waived in lieu of the appropriate non-destructive air-testing and vacuum testing as well as destructive seam testing on the secondary and primary geomembrane layers.

RFI-9 can be found in Appendix F: Request for Information (RFI).

2.6 GEOCOMPOSITE

2.7 GEOCOMPOSITE (SECONDARY LEAK DETECTION)

Geocomposite was installed on top of and within the footprint of the Secondary geomembrane and was deployed by hand.

The geocomposite panels were overlapped and the geonet components were joined together with cable ties spaced every five (5) feet along the machine edges, six (six) inches within the anchor trenches and six (6) inches along the cross-machine edges.

The top geotextile components of the geocomposite panels were stitched together.

No CQA field documentation forms were required for the installation of the geocomposite.

2.8 DRAINAGE AGGREGATE

A drainage aggregate consisting of a washed, 0.5-inch minus rounded stone was installed within the sump approximately 2-feet deep, on top of the geocomposite. The top layer of the aggregate was also overlain by geocomposite to act as a cushion for the primary geomembrane to be installed above. All rock was wrapped with an 8-oz/sy non-woven needle punched geotextile to provide a cushion to the primary geomembrane and act as a filter to prevent clogging of the drainage rock.

Pre-construction laboratory testing results can be found in Appendix B: Pre-Construction Material Testing.

The aggregate was delivered to the sump with a low ground pressure 4-wheeled ATV and was hand-shoveled into the sump.

No CQA field documentation forms were required for the placement of the drainage aggregate.

2.9 PRIMARY HDPE GEOMEMBRANE

A 60-mil HDPE was installed directly on top of the geocomposite (or on top of the geotextile over the sump).

2.9.1 Deployment

All Primary (top layer) geomembrane panels were deployed by hand, pulling from a roll attached to a skid steer stationed off the geomembrane. Upon deployment, each panel was labeled with an identification number with the prefix of “P” (Primary).

Deployment of the Primary geomembrane occurred on May 4, 2022, through May 17, 2022

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.
- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.
- Verified field-fabrication of geomembrane boots around pipe penetrations.
- Verified attachments to and around structures were completed.

In total, approximately 17,000 SF of Primary Geomembrane was deployed within the East and West Drying Pads, and ~11,000 SF of Primary Geomembrane was deployed within the Truck Wash Pad.

In total, approximately 450,684 SF of Primary Geomembrane was deployed within Cell E-1.

Deployment of the primary geomembrane panels was recorded on the Geomembrane Deployment Log for each pad, respectively, which can be found in Appendix H-14: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

2.9.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, The CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.
- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.
The Geomembrane Trial Welding Record is in Appendix H-4: CQA Field Records - Cell E-1.

The Tensiometer Calibration Certificate(s) are found in Appendix G: Equipment Calibrations.

2.9.3 Fusion Seaming

All primary production seams were thermally welded using a dual-track fusion machine. All Secondary to Primary seams were extrusion fillet welded between May 4, 2022, through May 17, 2022.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations. geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.
- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 659 lineal feet of panel seaming was fusion welded in the East Drying Pad, 650 lineal feet in the West Drying Pad, and 329 lineal feet in the Truck Wash Pad.

A total of approximately 492 lineal feet of panel seaming (primary to secondary welds) was extrusion fillet welded in the East Drying Pad, 503 lineal feet in the West Drying Pad, and ~424 lineal feet in the Truck Wash Pad.

A total of approximately 23,507 lineal feet of panel seaming was fusion welded.

All field documentation for the secondary primary seaming activities was recorded on the Seam Log for each pad, respectively, which can be found in Appendix H-14: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

2.9.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method. from May 4, 2022, through May 17, 2022. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

Each extrusion welded seam (primary to secondary welds) was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The extrusion welding for the pipe boots was non-destructively tested using the Holiday Spark Test Method.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified vacuum chamber and/or spark testing was completed for all extrusion welds and repairs.
- Verified all leaks identified by the above test methods were repaired in accordance with the contract documents.

All non-destructive testing was recorded on the Non-destructive Seam Test Record for each pad, respectively, which can be found in Appendix H-14: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

2.9.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500 -foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seams met the specified strengths provided within the Contract Documents. Each destructive sample consisted of

three sections: field test, laboratory test and owner archive. The field and laboratory sections were destructively tested for peel and shear.

The locations of these samples were recorded on the Destructive Seam Test Log for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.
Destructive seam samples were obtained at a minimum of 500 -foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seam met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. Each section was destructively tested for peel and shear.

A total of 63 destructive samples, including 4 failure tracking destructs, were marked on the primary welding from May 5 through May 21, 2022

The locations of these samples were recorded on the Destructive Seam Test Log which is found in Appendix H-4: CQA Field Records - Cell E-1.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI. All laboratory tested samples exceeded the minimum requirements provided within the Contract Documents. All laboratory tested samples except one, CPDS-45 failed to meet the minimum requirements provided within the Contract Documents. CPDS-45 was tracked in both the “before” (B) direction and the “after” (A) direction resulting in two new samples, CPDS-45-B and CPDS-45-A - both of which failed. The tracking in both the before and after directions resulting in samples CPDS-45-B1 and CPDS-45-A1, both which passed. The seam(s) between CPDS-45-B1 and CPDS-45-A1 were capped, thus concluding the bounding of failed CPDS-45.

Laboratory test results for each pad respectively are found in Appendix H-1: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.
Laboratory test results are located within Appendix H-4: CQA Field Records - Cell E-1.

2.9.6 Repairs

Primary geomembrane repairs were performed between May 09, 2022, through May 21, 2022. During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.

- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.
- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.
- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the primary repair activities was recorded on the Repair Log for each pad, respectively, which can be found in Appendix H-14: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

2.9.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

Each extrusion welded repair was non-destructively tested with a vacuum box from May 9, 2022, through May 21, 2022. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log for each pad, respectively, which can be found in Appendix H-14: CQA Field Records - East Drying Pad; Appendix H-2: CQA Field Records - West Drying Pad; Appendix H-3: CQA Field Records – Truck Wash Pad.

2.9.8 Geotextile

2.9.9 Sump Test

The CQA Plan Section 2.7.3, Second Paragraph Bullet #4 discusses the requirement of a sump test. Per RFI-9, this requirement was waived in lieu of the appropriate non-destructive air-testing and vacuum testing as well as destructive seam testing on the secondary and primary geomembrane layers.

RFI-9 can be found in Appendix F: Request for Information (RFI).

2.10 GEOCOMPOSITE (PRIMARY LEACHATE DRAINAGE)

An 8-oz non-woven, needle-punched geotextile was installed directly on top of the Primary geomembrane layer.

The textile was deployed by hand (with the roll attached to a skid steer via a spreader bar which was stationed off the geomembrane. The geotextile was overlapped as necessary to join panels. Panels were joined via stitching. The installed panels and completed panel connections were visually inspected by the CQA Monitor. Geotextile patches (repairs) were thermally fused using a hot air gun.

During geotextile installation, the CQA Monitor performed the following general construction quality assurance verification procedures:

- Verified geotextile was installed in accordance with the Contract Documents.
- Verified geotextile was installed with sufficient tension to prevent excessive wrinkles and folds.

The textile completely overlapped the underlying drainage aggregate and was heat tacked to the underlying geocomposite.
Geocomposite was installed on top of and within the footprint of the Primary geomembrane and was deployed by hand.

The geocomposite panels were overlapped and the geonet components were joined together with cable ties spaced every five (5) feet along the machine edges, six (six) inches within the anchor trenches and six (six) inches along the cross-machine edges.

The top geotextile components of the geocomposite panels were stitched together.

No CQA field documentation forms were required for the installation of the geotextile or geocomposite.

2.11 DRAINAGE AGGREGATE

A drainage aggregate consisting of a washed, 0.5-inch minus rounded stone was installed within the sump and the main leachate collection trench around the collection piping, on top of the

geocomposite. The top layer of the aggregate was also overlain by geocomposite to act as a cushion for the primary geomembrane to be installed above. This layer of aggregate was installed to a height of ~1-ft above the top of the protective soil cover layer to allow for direct connectivity to the primary geocomposite. All rock was wrapped with an 8-oz/sy non-woven needle punched geotextile to provide a cushion to the primary geomembrane and act as a filter to prevent clogging of the drainage rock.

Pre-construction laboratory testing results can be found in Appendix B: Pre-Construction Material Testing.

The aggregate was delivered to the sump with a low ground pressure 4-wheeled ATV and was hand-shoveled into the sump.

No CQA field documentation forms were required for the placement of the drainage aggregate.

2.12 HDPE PIPE

A perforated 4-inch SDR-9 HDPE leachate collection pipe was welded and installed into the leak detection layer sump and into the primary leachate collection sump over geotextile. The pipes were aligned per plan, and grades were verified via survey by TGS.
High Density Polyethylene (HDPE) pipes were installed within Cell E-1 for leachate collection and conveyance.

12-inch HPDE pipes were installed sitting on top of the secondary geocomposite located within the sump and running up the side-slopes. Within the sump, pipes were perforated, transitioning to solid on the side slopes. All pipes were thermally fusion welded. The perforated pipes were then "burrito-wrapped" with drainage aggregate and 8-oz non-woven, needle-punched geotextile. The geotextile was overlapped but not thermally joined.

6-inch HDPE pipes were installed within the Cell E-1 primary layer flow line running into the sump and then up the side slope. Within the flow line and into the sump, the pipes were perforated transitioning to solid on the side slope. They were installed sitting on top of an 8-oz non-woven, needle-punched geotextile which was later used to wrap the pipe and drainage aggregate. All pipes were thermally fusion welded. Pipes were then "burrito-wrapped" with drainage aggregate and geotextile. The geotextile was overlapped but not thermally joined. From the sump and up the side slope, the 6-inch and 18-inch pipes were burrito-wrapped together.

18-inch HDPE pipes were installed within the Cell E-1 primary sump, running up the side slope. Within the sump, the pipes were perforated, transitioning to solid up the side slope. They were installed sitting on top of an 8-oz non-woven, needle-punched geotextile which was later used to wrap the pipe and drainage aggregate. All pipes were thermally fusion welded. Pipes were then "burrito-wrapped"

with drainage aggregate and geotextile. The geotextile was overlapped but not thermally joined. From the sump and up the side slope, the 6-inch and 18-inch pipes were burrito-wrapped together.

No CQA field CQA documentation forms was required for the installation of the HDPE pipe work.

2.13 CAST IN PLACE CONCRETE

2.13.1 Material

A concrete mix was submitted on April 4, 2022 by Lea County Concrete and approved by the Structural Engineer.

2.13.2 Placement

A concrete pad was placed on top of the drainage rock layer which had been placed over top of the primary geotextile. Concrete placement occurred on May 21, 2022.

2.13.3 Construction Quality Control

SCS submitted RFI 16 - Concrete Quality Control Specifications on April 27, 2022, which contained a summary of the quality control requirements for the concrete work.

Beyond ET performed the concrete quality control testing in accordance with ACI 301 at a rate of one sample per 50 cubic yards of concrete placed. For each sample taken, the following tests were performed:

5. Strength (7- and 28-day compressive strength)
6. Slump
7. Temperature
8. Air Content

Concrete test reports can be found in Appendix I: Concrete Laboratory Testing Data.

2.13.4 Concrete / Geomembrane Attachment:

Detail D:9TW shows a mechanical attachment of the geomembrane to the cast in place concrete via batten strip, however on March 23, 2022, the Engineer approved the use of Solmax Concrete PolyLock embedment strips in response to Submittal #17.

PolyLock embedment strips were installed by Lea County Concrete during the concrete pour. The secondary and primary HDPE geomembranes were extrusion welded to the PolyLock on June 02, 2022.

On May 31, 2022, the Engineer approved not non-destructively testing the extrusion weld joining the geomembrane sheet to the PolyLock embedment strip.

2.14 COMPLETION OF WORK:

CQA activities related to the Cell E-2 pertaining to the scope of this Report concluded on June 1, 2022, June 2, 2022, and June 7, 2022 respectively.

2.15 ANCHOR TRENCH BACKFILL

The geomembrane extending past the outside corner of the floor of the anchor trench was trimmed by Mustang prior to backfill. The anchor trenches were backfilled in 12-inch-thick lifts with General Fill and the top lift was density tested.

Results for the lift maps and the anchor trench density tests are found within Appendix H-4: Cell E-1.

2.16 PROTECTIVE COVER (PROTECTIVE SOIL LAYER, OR PSL)

Protective cover material consisted of native material from the Cell E-1 excavation and did not require testing per NRSWMF Permit NM1-66 Condition 6.L, and is in general compliance with minor permit modification approved by the New Mexico Energy, Minerals and Natural Resources Department – Oil Conservation Division dated June 15, 2022. Suitable PSL material was stockpiled to the south of the excavation area and hauled back into the finished/lined cell from the southwest corner via the as-designed cell ramp that was also constructed out of protective cover material. Thickened sections over the liner were constructed within the cell out of protective cover material so that articulating haul trucks had a "road" and could further haul material into the cell. After all the material was hauled into the cell, the haul roads were spread out by a light ground pressure bulldozer to an approximate thickness of 24-inches using dozer-equipped GPS for grade control. On the slopes, the protective cover was pushed up-slope.

Please note that the one-foot of protective cover over top of the perimeter berm and anchor trench did not need to be density tested as shown on Detail C-7PR per waiver from the Engineer. PSL Placement was completed on June 2, 2022.

2.17 LEACHATE PUMP STATION

The Cell E-1 leachate pump riser pipes concrete headwall is per Detail G on drawing 7PR and the clarified dimensions provided on RFI 17. The Cell E-1 leachate transfer pump was submitted by the Contractor (Submittal #8) and approved by the Engineer in compliance with the specifications. Due to long vendor lead times the approved leachate pump had not arrived and been installed at the time the preparation of this report. It is the understanding of the CQA Team leachate levels will be monitored by the Operator daily and pumped manually using portable pumps until the permanent

approved pumps arrive and are installed per plan. Documentation and verification of this is not within the scope of the CQA certification documentation of this report.

2.18 COMPLETION OF WORK

CQA activities related to Cell E-1 within the scope of this report concluded when on June 7, 2022. Introduction:

3.0 LEACHATE POND

3.1 INTRODUCTION

Leachate Pond, approximately 2.5 acres in size, lies within the western half of the work area. It is comprised of the following layers: (from the bottom up):

1. Existing native soil
2. Prepared subgrade for the geosynthetic layers
3. Reinforced GCL
4. Secondary geomembrane (60-mil HDPE)
5. Geocomposite leak detection layer
6. Primary geomembrane (60-mil HDPE)

3.2 EARTHWORK CONSTRUCTION

Fill material was placed on top of the existing native soil within the leachate pond as needed to bring it up to the required elevations. Prior to fill operations, the in-situ (existing) material was proof rolled. The proof roll was performed with a loaded articulating truck and was observed by the CQA Monitor. No areas of non-conforming materials were observed.

The soil material above the floor of the leachate pond was cut and removed to attain the design elevations; however, fill material was placed to construct the upper elevations of the leachate pond containment berms to bring them up to the required elevations. A total of six (6) lifts were constructed and tested within the above grade containment berm construction. Below grade in-situ surfaces were contoured, scarified, recompacted, and rolled, however no testing was required on in-situ surfaces.

During fill operations, approved material from within the Cell E-1 excavation was hauled via articulating haul trucks and placed where required to meet design grades. Structural fill material for the containment berms was spread with a CAT D6 bulldozer with GPS into approximate 8-inch loose lifts. The material was then moisture conditioned and compacted by a CAT CP56B compactor.

Upon completion of compaction, each lift of structural fill was tested via a portable nuclear density gauge at a frequency of twelve (12) tests per acre per constructed lift. The Modified Proctor was used for all testing performed for the Cell E-1 Berms. For tests utilizing the Modified Proctor, a minimum compaction of 92% Maximum Dry Density (MDD) and a moisture range of +/-2% of the Optimum Moisture (OM) was required. Density testing on below grade cut and rolled surfaces was not required

Density testing on the Leachate Pond berms was performed on April 23, 2022 through May 03, 2022.

Density Test Logs and Lift Map Field Sketches for the Leachate Pond can be found in Appendix H-5: CQA Field Records - Leachate Pond.

The proctor data can be found in Appendix B: Pre-Construction Material Testing.

3.3 PREPARED SUBGRADE

In general, the prepared liner subgrade was constructed, prepared and tested as needed as discussed in the previous section. The final surface was smooth rolled and inspected. The prepared subgrade was surveyed by the CQA Surveyor, and the elevations were approved by the Engineer.

The prepared subgrade was visually inspected by CQAS from May 20, 2022, through May 23, 2022, prior to any geosynthetic material placement. Any identified conditions that did not conform to the Contract Documents were corrected by the Earthworks Contractor. The prepared subgrade was surveyed by the CQA Surveyor, and the elevations were approved by the Engineer.

Upon completion of the subgrade inspection, a Subgrade Acceptance Form was signed by the CQA Monitor and the Geosynthetics Installer. All parties visually examined the subgrade surface to ensure no deleterious materials or materials that would potentially damage the geomembrane system were present in the areas to be covered. This included a visual inspection for rocks, yielding soils, moisture content, structural abnormalities, or any deleterious materials on the geosynthetic lining surface. Subgrade surface approval was made before any geosynthetics were deployed over any surface.

The signed Subgrade Acceptance Form(s) for the Leachate Pond can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.4 GEOSYNTHETIC CLAY LINER (GCL)

The reinforced GCL was installed from May 20, 2022, through May 23, 2022 directly on top of the prepared subgrade and was deployed via spreader bar on a skid steer with an overlap of 6-inches on the machined edges and 24-inches on the cross-machined edges. Bentonite was applied to the seam area prior to overlapping. Seams were heat bonded using a hot air gun.

Approximately 109,500 SF of GCL was installed from May 20, 2022, through May 23, 2022.

Repairs to the GCL were performed as needed using a GCL patch which was a minimum of twelve (12) inches overlapped beyond the damage and hot air bonded to the parent sheet.

No CQA field data sheets were required for the GCL installation.

3.5 SECONDARY 60-MIL HDPE GEOMEMBRANE

3.5.1 Deployment

All Secondary (bottom) geomembrane panels were deployed with a spreader bar attached to a skid-steer stationed off the geotextile and pulled by hand and were installed directly on top of and with intimate contact with the geotextile. Upon deployment, each panel was labeled with an identification number with the prefix of "S" (secondary).

Deployment of the Secondary geomembrane occurred between May 20, 2022, through May 23, 2022.

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.
- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.

In total, approximately 109,479 SF of Secondary Geomembrane was deployed within Leachate Pond.

Deployment of the geomembrane panels was recorded on the Geomembrane Deployment Log and a field sketch was drawn which is in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.
- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.
- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record and Tensiometer Calibration Certificate(s) are in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.3 Fusion Seaming

All secondary production seams were thermally welded using a dual-track fusion machine from May 20, 2022, through May 23, 2022.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations, geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.
- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 5,470 lineal feet of panel seaming was fusion welded. There was no secondary extrusion welding for panel seaming.

All field documentation for the secondary seaming activities was recorded on the Seam Log which can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method on May 23, 2022. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified all leaks identified were repaired in accordance with the contract documents.

All non-destructive testing Non-destructive Seam Test Record can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500-foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seams met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. The field and laboratory sections were destructively tested for peel and shear.

A total of 14 destructive samples were marked on the secondary welding from May 21, 2022, through May 24, 2022.

The locations of these samples were recorded on the Destructive Seam Test Log which is in Appendix H-5: CQA Field Records - Leachate Pond.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI.

All laboratory tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory test results are located within Appendix H-5: CQA Field Records - Leachate Pond.

3.5.6 Repairs

Secondary geomembrane repairs were performed on May 21, 2022, through May 24, 2022. During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.
- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.
- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.
- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.
- Verified field-fabrication of geomembrane boots around pipe penetrations. There was one (1) pipe boot installed. This was a temporary boot until the concrete was poured. After the concrete pour, this was replaced with a permanent boot. The final permanent boot was non-destructively tested via the Holiday Spark test method.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the secondary repair activities was recorded on the Repair Log which can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box from May 21, 2022, through May 24, 2022. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure of 1 to 4 psi via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a minimum dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log which can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.5.8 Sump Test

The CQA Plan Section 2.7.3, Second Paragraph Bullet #4 discusses the requirement of a sump test. Per RFI-9, this requirement was waived in lieu of the appropriate non-destructive air-testing and vacuum testing as well as destructive seam testing on the secondary and primary geomembrane layers.

RFI-9 can be found in Appendix F: Request for Information (RFI).

3.6 GEOCOMPOSITE (SECONDARY LEAK DETECTION)

Geocomposite was installed on top of and within the footprint of the Secondary geomembrane and was deployed by hand.

The geocomposite panels were overlapped and the geonet components were joined together with cable ties spaced every five (5) feet along the machine edges, six (six) inches within the anchor trenches and six (6) inches along the cross-machine edges.

The top geotextile components of the geocomposite panels were stitched together.

No CQA field documentation forms were required for the installation of the geocomposite.

3.7 DRAINAGE AGGREGATE

A drainage aggregate consisting of a washed, 0.5-inch minus rounded stone was installed 2-feet deep up to the rim of the leak detection sump. All rock was wrapped with an 8-oz/sy non-woven needle punched geotextile to provide a cushion to the primary geomembrane and act as a filter to prevent clogging of the drainage rock.

Pre-construction laboratory testing results can be found in Appendix B: Pre-Construction Material Testing.

The aggregate was delivered to the sump with a low ground pressure 4-wheeled ATV and was hand-shoveled into the sump.

No CQA field documentation forms were required for the placement of the drainage aggregate.

3.8 PRIMARY HDPE GEOMEMBRANE

A 60-mil HDPE was installed directly on top of the geocomposite (or on top of the geotextile over the sump).

3.8.1 Deployment

All Primary (top layer) geomembrane panels were deployed by hand, pulling from a roll attached to a skid steer stationed off the geomembrane. Upon deployment, each panel was labeled with an identification number with the prefix of "P" (Primary).

Deployment of the Primary geomembrane occurred on May 26, 2022, through May 27, 2022.

Panels were deployed with an approximate overlap of approximately four (4) to six (6) inches to accommodate thermal fusion welding.

During geomembrane deployment operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Verified rolls were unloaded, handled, and transported in a way that did not cause damage to the geomembrane or the protective coverings.
- Verified underlying surface preparation was complete and acceptable before geomembrane installation.
- Monitored and documented geomembrane deployment operations. Monitored and obtained the following documentation: panel numbers, roll numbers, panel dimensions, panel areas, and field sketches of daily panel layout drawings.
- Verified panels were overlapped with a minimum of approximately 4 to 6 inches required for fusion welding machines.
- Verified any damaged geomembrane was either repaired or removed entirely.
- Verified excessive wrinkling of the geomembrane did not occur and compensation for stress bridging was added during deployment operations when necessary. Verified excessive wrinkles and stress bridging were repaired or removed entirely.
- Verified field-fabrication of geomembrane boots around pipe penetrations.
- Verified attachments to and around structures were completed.

In total, approximately 109,500 SF of Primary Geomembrane was deployed within the Leachate Pond.

Deployment of the primary geomembrane panels was recorded on the Geomembrane Deployment Log which is in Appendix H-5: CQA Field Records - Leachate Pond.

3.8.2 Trial Welds

During geomembrane trial weld (pre-welding) operations, The CQA Monitor performed the following construction quality assurance verification procedures:

- Verified that the tensiometer had a valid calibration certificate

- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.
- Recorded ambient temperatures to verify they were within the range specified in the Contract Documents.
- Monitored, documented, and verified that each fusion and extrusion welding machine completed trial welds and met the criteria for peel and shear strength testing in accordance with the Contract Documents and approved submittals.

The Geomembrane Trial Welding Record is in Appendix H-5: CQA Field Records - Leachate Pond.

The Tensiometer Calibration Certificate(s) are found in Appendix G: Equipment Calibrations.

3.8.3 Fusion Seaming

All primary production seams were thermally welded using a dual-track fusion machine between May 26, 2022, through May 27, 2022.

During geomembrane welding operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane welding operations. geomembrane seam numbers, welding operators, welding machine numbers, and seam lengths.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104°F.
- Visually verified welding surfaces were thoroughly cleaned prior to welding operations to remove dust and dirt.
- Verified seams were welded at the same machine settings speed used to prepare the trial weld samples.
- Verified the welding operators and machine numbers, times, and dates on each seam welded.
- Verified each operator and machine combination was tested for each interface (smooth/smooth, textured/textured, and textured/smooth) and frequency as required by the Contract Documents.

A total of approximately 5,110 lineal feet of panel seaming was fusion welded.

In the Leachate Pond, the primary and secondary layers were not welded together - instead both layers terminated within the anchor trench.

3.8.4 Non-Destructive Seam Testing:

All field fusion welds were continuity tested by the air pressure test method from May 26, 2022, through May 27, 2022. This process involved sealing both ends of the air channel and the insertion of a gauged needle into one end of the air channel. A minimum air pressure of 30-psi was applied to the air channel and after a minimum period of five (5) minutes, the gauge was observed for pressure loss. Per the Construction Documents, a maximum pressure loss of 3-psi was permitted for a passing result.

Each extrusion welded seam (primary to secondary welds) was non-destructively tested with a vacuum box. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The extrusion welding for the pipe boots was non-destructively tested using the Holiday Spark Test Method.

During non-destructive testing verification the CQA Monitor monitored and verified the following procedures:

- Verified air testing was completed for all fusion welds.
- Verified vacuum chamber and/or spark testing was completed for all extrusion welds and repairs.
- Verified all leaks identified by the above test methods were repaired in accordance with the contract documents.

All non-destructive testing was recorded on the Non-destructive Seam Test Record which can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.8.5 Destructive Seam Test

Destructive seam samples were obtained at a minimum of 500-foot intervals for fusion and extrusion welded seams. The purpose of destructive testing was to verify that the finished seam met the specified strengths provided within the Contract Documents. Each destructive sample consisted of three sections: field test, laboratory test and owner archive. Each section was destructively tested for peel and shear.

A total of 15 destructive samples, including 4 failure tracking destructs, were marked on the primary welding from May 27, 2022, through May 28, 2022.

The locations of these samples were recorded on the Destructive Seam Test Log which is in Appendix H-5: CQA Field Records - Leachate Pond.

Field samples were tested on-site by the Installer with a calibrated tensiometer. All field-tested samples exceeded the minimum requirements provided within the Contract Documents.

Laboratory samples were shipped to and tested by TRI. All samples passed both the field and laboratory testing.

Laboratory test results are located within Appendix H-5: CQA Field Records - Leachate Pond.

3.8.6 Repairs

Primary geomembrane repairs were performed on May 28, 2022. During geomembrane repair operations, the CQA Monitor performed the following construction quality assurance verification procedures:

- Monitored and documented geomembrane extrusion welding operations.
- Recorded repair numbers, welding operators, welding machine numbers and repair/patch sizes.
- Verified welding operations took place only when the ambient temperature was between 40°F and 104 °F.
- Visually verified that welding surfaces were thoroughly cleaned prior to welding operations.
- Verified the repair operators recorded welding machine numbers, operator ID, machine settings, times, and dates on each repair welded.
- Verified each operator and machine combination performed a passing trial weld as required by the Contract Documents and were welded at the same machine settings used to prepare the trial weld samples.

All production repairs were thermally welded using extrusion fillet welds.

All field documentation for the primary repair activities was recorded on the Repair Log which can be found in Appendix H-5: CQA Field Records - Leachate Pond.

3.8.7 Vacuum Test

Each extrusion welded repair was non-destructively tested with a vacuum box on May 28, 2022. This method involved the application of a soapy water placed over the extrusion weld and the application of a vacuum pressure via a vacuum-chamber box with a clear viewing window. Once the required vacuum pressure was achieved, a dwell time of 10 seconds was achieved. During that time, the testing technician observed the testing area through the viewing window. No leaks were observed.

The vacuum-test data was documented on the Repair Log which can be found in Appendix H-4: CQA Field Records - Cell E-1.

3.9 VENTS

Fifty (50) vents were installed on the primary layer of geomembrane at the top of slope, spaced at approximately 25 feet. To create each vent, a one-inch diameter hole was cut into both the secondary and primary geomembrane layers. An HDPE "patch" was then placed on top of the primary geomembrane and welded on three sides (the downslope side was left unwelded).

3.10 TOE-LINE BALLASTS

Detail C-6PR calls out 8" diameter, 4-foot long 45-mil reinforced Polypropylene sand tubes placed along the toe of slope at however RFI #18 permitted the field fabrication of these tubes utilizing leftover 60-mil HDPE. RFI #18 can be found in Appendix F: Request for Information (RFI).

The sand tubes were field-fabricated and were placed by hand while the CQA Monitor was on site while the remaining 7 tubes could not be properly positioned (due to standing water in the immediate area) while the CQA Monitor was on-site. These were repositioned to the correct spacing along the toe of slope after the CQA Monitor demobilized from the jobsite and observed by the Owner. Sand tubes were spaced out along the toe with an approximate spacing of 22-feet (center of every slope panel).

3.11 HDPE PIPE

High Density Polyethylene (HDPE) pipes were installed within Leachate Pond for the leak detection system.

A 12-inch HDPE SDR 17 perforated pipe was installed within the sump between the secondary and primary layers. The perforated pipe was then covered with washed gravel which was wrapped with geocomposite.

The perforated leak detection pipe was capped at the downslope (sump) termination and transitioned to a solid riser pipe running up the slope where it exits the pond.

All pipes were thermally fusion welded.

No field CQA documentation was required for the pipe work.

3.12 ANCHOR TRENCH BACKFILL

The geomembrane extending past the outside corner of the floor of the anchor trench was trimmed by Mustang prior to backfill. The anchor trenches were backfilled in 12-inch-thick lifts with General Fill and the top lift was density tested.

Results for the lift maps and the anchor trench density tests are found within Appendix H-5: Leachate Pond.

3.13 COMPLETION OF WORK

CQA activities related to Leachate Pond within the scope of this report concluded when on June 7, 2022.

4.0 LEACHATE FORCEMAIN

Construction of the leachate forcemain as designed and shown on drawings 10PL and 10DET did not require CQA Monitoring oversight or documentation and was completed after CQA Monitor demobilized from the facility. During final project walkthrough on July 7, 2022, Engineer noted that all piping installed to date was dual contained piping when outside the liner system areas and the discharge pipe into the leachate evaporation pond was changed to have the pipe daylight prior to the berm and placed over the upper rim of the pond to eliminate the pipe boot/penetration connection as shown on Detail B on Drawing 10PL. Engineer also noted that the pipe appeared to be in general conformance with the Drawings 10PL and 10DET based on observable locations of valve boxes and junctions. Owner surveyed the as built alignment of the leachate forcemain which can be provided upon request.

SECTION 6: INDEMNIFICATION

It should be noted that the test specimens and test samples used for this report are believed to be representative of the Work performed. The testing herein is based upon accepted industry practices for construction QA/QC and Laboratory procedures as well as the test methods listed. However, these results are indicative of only the specimens that were actually tested. It should also be noted that observed, monitored, and performed CQA testing to the limitations of one person and cannot be responsible for operational and maintenance performance of the liner system.

The findings and professional opinions contained in this report were prepared in accordance with generally accepted professional principles and practices for waste containment construction.

The CQA Consultant (as defined in Section 1.0, Part 1.1.2 of this Report) make no warranty expressed, written or implied.

SECTION 7: AS-BUILT CERTIFICATION

I, Michael P. Bradford, P.E (NM #19240), hereby certify the completed construction of portions of the North Ranch Surface Waste Management Facility: Cell E-1 and Operational Infrastructure which require a licensed professional engineer's certification as required by New Mexico Administrative Code Title 19, Chapter 15, Part 36 and the Surface Waste Management Facility Permit Conditions NM1-66 and associated permit modifications as approved by the New Mexico Energy, Minerals and Natural Resources Department – Oil Conservation Division. This certification is based upon third party on-site observation, material testing, documentation, and reporting conducted by me or by a third-party representative under my direct supervision. This Certification is contingent on the belief that all information supplied by other parties as of the date of this certification, used by the Certifying Engineer to certify, was generated using accepted industry practices and procedures and are to my knowledge accurate and provided in good faith.

Seal and Signature of Certifying Engineer
Michael Paul Bradford, P.E. (NM #19240)

APPENDIX A: RESUMES

BRENT J. DUGANIERO
Senior Project Manager, Instructor

PROFESSIONAL BACKGROUND

Mr. Duganiero has over 14 years experience in waste management facility Construction Quality Assurance (CQA) and has been involved with projects throughout the United States. In addition to his certification in compacted clay liners and geosynthetics through the Geosynthetic Certification Institutes Inspector Certification Program, Mr. Duganiero also is an instructor for the GRI-ICP preparatory class as well as an authorized proctor for the examinations.

Mr. Duganiero's leadership and management responsibilities have included speaking at formal CQA training sessions with state regulatory agencies, engineering firms, general contractors and geosynthetic installers as well as managing earthwork, geosynthetics, and landfill gas collection system projects of all sizes. He was also part of the design team for a Geosynthetics CQA software. Mr. Duganiero's responsibilities have included monitoring of construction activities in waste management facilities to ensure conformance with design specifications and compliance with government regulatory agency regulations. He has written final reports, QC/QC Plans and other submittals for clients and appropriate agencies. CQA monitoring skills include observation, monitoring, documentation, and troubleshooting of soil and geosynthetic liner systems construction. Mr. Duganiero has performed both soil and geosynthetics sampling and was responsible for assuring proper destructive test coverage on several landfill construction projects. His experience includes both cold and hot weather as well as night construction. Mr. Duganiero also has experience in the use of Global Positioning System (GPS) surveying and total station surveying. Mr. Duganiero's combined field and management of CQA projects has quickly totaled over 800 acres, including over 700,000 cubic yards of compacted soil CQA and over 48 million square feet of geomembrane (LLDPE, HDPE, PVC) CQA. He has been asked to provide consultation and review of construction plans on sites that had encountered numerous constructability problems and has written QA/QC Plans and Final Construction Reports.

Mr. Duganiero's safety experience includes teaching/instructing geosynthetics safety classes, assistance with a power plant's certification for OSHA's Voluntary Protection Program (VPP) and is the Radiation Safety Officer (RSO) and Safety Officer for CQA Solutions.

The combination of Mr. Duganiero's education, quick-learning abilities, experience, and trouble-shooting abilities has allowed him to effectively and efficiently serve clients, whether as the project manager, lead CQA, or as a CQA crew member.

CAREER HIGHLIGHTS

- **Geosynthetics; CCR Storm Water Pond, Montour, PA**
  Senior geomembrane CQA inspector for the installation of scrim-reinforced geomembrane for a Coal Combustible Residual (CCR) storm water pond for a coal burning power plant. Although this project was small in regard to other completed projects, this project attained much attention due to a geomembrane manufacturer utilizing this project for a test of a new geomembrane product.

- **Geotechnical & Geosynthetics, Phosphogypsum Storage, Illinois, 2017-2019**
  Provided Project Management of a multi-member quality control team for the construction of an approximate 100-acre phosphogypsum storage facility closure. The project consisted of earthwork, geosynthetics and pipe-work. Responsibilities included creation of the Quality Control Plan for the project and management of personnel over the 3-year project.

- **Geosynthetics, Waste Water Treatment Facility, Illinois, 2017**
  Provided CQA observation and documentation for the construction of three simultaneously constructed wastewater treatment ponds. The project consisted of several concrete structures to which the geomembrane was to be mechanically attached. This process included the implementation of both embedded HDPE channels as well as batten strips. Although this project had a small footprint, there were numerous penetrations and mechanical attachments causing the QA work to highly technical.

- **Geosynthetics, MSW Landfill, Ohio, 2017**
  Provided CQA observation and documentation for the construction of an approximate 6-acre landfill closure.

- **Geosynthetics, MSW Landfill, Ohio, 2017**
  Provided CQA observation and documentation for the construction of an approximate 6-acre landfill cell and an investigation for several leaks in an adjacent cell.

- **Geotechnical, CCR Landfill, OH, 2015 to 2016**
  Provided CQA observation, documentation and testing for the construction of a new 20-acre coal combustion residuals landfill. Project included approx 101,400CY of RSL, over 800,000CY of Structural Fill, over 12,000LF of leachate conveyance and under-drain pipes and over 500 soil and bottom ash samples collected. In addition to the construction of the new cell, numerous other construction activities throughout the approx 100-acre site were documented such as the construction of storm-water controls, haul roads, and a 1-acre leachate collection pond with geosynthetic liner.

- **Geosynthetics, Hazardous Waste Impoundment, New Jersey, 2016**
  Provided CQA observation and documentation for the installation of a 5-acre HDPE geomembrane cap over a hazardous waste impoundment at a chemical plant. Due to the sensitive nature of the project, Federal clearance was needed for any work on this site. Project included 217,800SF of 40-mil HDPE and geocomposite. Also, upon completion of the project, a full written Construction Report was written and supplied to the Client.

- **Geosynthetics, Copper Mine, Utah, 2016**
  Provided CQA management and design consultation / review for the installation of rigid HDPE stud liner panels embedded into concrete for several weirs in a storm water collection system. The construction began without the involvement of CQA Solutions and had several construction problems. CQA Solutions was contacted to assist both in the review of the design as well as the CQA for the continuation of the install.

- **Geosynthetics, Evaporation Pond, Arizona, 2009 to 2013**
  Provided training and support for CQA of a double-containment geosynthetic lining of a large evaporation pond for a nuclear power facility in Arizona. Involvement in the project included approximately 5 million square feet of material of HDPE geomembrane including stud liner.

- **Geotechnical, Geosynthetics and Survey, New Cell Construction, Ohio, 2015**

CQA Project Manager for a new MSW landfill cell in NW Ohio. Project totaled approximately 16 acres. Responsibilities included reviewing all field documentation, survey data and preparing reports for submittal to the OEPA.

- **Geosynthetics, New Cell Construction, Hawaii, 2013**
  CQA Monitor for new cell construction in Hawaii. Project consisted of encapsulated GCL between Secondary and Primary liners. Challenges included extremely steep slopes and documentation of extensive damages caused by extreme weather conditions (wind and rain).

- **Geotechnical, Geosynthetics and Survey, New Cell Construction, Ohio, 2013**
  CQA Project Manager for a new MSW landfill in NW Ohio. Project totaled approximately 17 acres. Responsibilities included training personnel, reviewing all field documentation and preparing reports for submittal.

- **Geosynthetics, Road Base and Landfill Cap, Ohio, 2013**
  CQA Lead Monitor for the Geosynthetics phase of a public road through an existing landfill. The project consisted of a Geomembrane and geocomposite layer serving as a barrier under the sub-base of the road as well as a cap of the relocated waste (both totaling approximately 9 acres).

- **Geotechnical, Agricultural Waste Containment Pond, Ohio, 2013**
  CQA Project Manager for a waste containment pond at an agricultural facility. Responsibilities included training personnel as well as review of field documentation.

- **SuperTek Design Team**
  Mr. Duganiero played a critical role as part of the design team for SuperTek, a geosynthetic installation CQA software. He has assisted in much of the design and development of how the software validates the field data. His role has also included extensive testing of the software in both field and office applications. He has also conducted on-the-job training for clients on the use of SuperTek as well as providing on-site trouble-shooting for improved performance on unique job-sites.

- **Geosynthetics, New Cell Construction, Wyoming, 2012**
  CQA team Project Manager for first geomembrane lined cell/ponds in Wyoming. Project consisted of 1 cell and 2 ponds totaling 9.5 acres of containment. GCL was placed below the 60mil HDPE geomembrane. Pond and cell approval was granted by regulatory agency. Responsible for review of material conformance testing and destructive sample results.

- **Geotechnical and Geosynthetics, Landfill Cap, Fostoria, OH, 2012**
  CQA team Project Manager for 17-acre landfill cap in Ohio. Project consisted of re-compacted soil barrier (RSLB) and 60-mil HDPE liners. Overseen GPS survey data collection and review for re-compacted clay lift thickness, certification points and the geomembrane as-built as well as the lay-out of various ditches and pipes.

- **Geosynthetics, Evaporation Ponds, Arizona, 2012-2013**
  Provided both on-site and remote management and management training/support for CQA of double-containment geosynthetics 78-acre pond lining and 53-acre ponds. Overseen extensive software data collection and validation system used on this project. Smooth and one-sided textured white conductive HDPE geomembrane sheet utilized for both primary and secondary containment layers. GCL and geonet were installed as well as a geotextile filtration and cushion layer in the leachate collection trenches. CQA role was part of multi-

company CQA effort. Geomembrane contractor installed up to 1 million square feet of material per week, and summer construction activities performed at night due to desert heat.

- **Geosynthetics, Evaporation Ponds, Arizona, 2009-2010, 2011**
  CQA assistant manager for double-containment geosynthetics pond lining for a 30-acre pond (2009), 120-acre pond (2010) and an 86-acre pond (2011). Smooth and one-sided textured white conductive HDPE geomembrane sheet utilized for both primary and secondary containment layers. Secondary geonet installed in both ponds; 30-acre pond also utilized

  primary geonet and geotextile on floor of pond. CQA role was part of multi-company CQA effort where responsibilities in addition to field CQA included review of daily paperwork for the entire team, coordinating CQA efforts among team-members, and review of geomembrane as-builts. Geomembrane contractor installed up to 1 million square feet of material per week, and summer construction activities performed at night due to desert heat.

- **Geosynthetics, IWL, New Cell Construction, West Virginia, 2008**
  Alternating CQA assistant/lead for PVC geomembrane installation for coal fly ash containment involving valley filling operation. Due to nature of valley lining, project was very complex in terms of fitting geomembrane to shape, resulting in a multitude of odd shaped panels and seams. Observed both solvent and thermal welding procedures, tracked failing seam destructive samples, and monitored air-lance of both factory and field seams and repairs.

- **Geosynthetics – MSWL, Central Ohio, 2008**
  Lead CQA monitor for a 5-acre cell involving 60 mil HDPE textured geomembrane, geocomposite, and a rain-flap.

- **Geotechnical and Geosynthetics, IWL, Northeast Ohio, 2007**
  CQA team member for 10-acre new cell construction. Assisted in determination of suitable and unsuitable soils, used for landfill base foundation. Performed extensive surveying to assure contractor removed all of the unsuitable soils. Approximately 27,000 cubic yards of unsuitable soil were removed by the contractor. Project also required the placement of 180,000 cubic yards of structural fill to replace the excavated unsuitable soils, as well as build berms. Performed CQA of the recompacted soil liner, 60 mil textured HDPE geomembrane, including as-built surveys of each layer using GPS. As the geomembrane work proceeded through the fall, cold weather seaming practices were implemented and monitored.

- **Geosynthetics – Sunny Farms Landfill, Cell 6A, 2007**
  CQA lead and assistant on both the initial installed 60 mil HDPE textured geomembrane and the replacement layer of 60 mil HDPE textured geomembrane. Initial geomembrane was full of blemishes, and after lengthy documentation, and discussions with manufacturer and installer, it was replaced. New geomembrane was placed directly over previous geomembrane to protect subgrade; new layer was bonded to first layer at specified intervals using extrusion welding to make the separate sheets act as one sheet—activities needed to be performed at night when first liner was in relaxed state.

- **Geotechnical and Geosynthetics, MSWL, Southeast Ohio, 2006**

CQA crew member for 10-acre single composite liner system, which utilized recompacted processed clay, a GCL, 60 mil HDPE geomembrane, geocomposite, and a sand drainage/protective layer to ensure conformance with design specifications. An additional 10,000 cubic yards of added geologic material, and over 20,000 cubic yards of structural fill were also monitored and tested as part of the construction process. In order to meet project deadlines, earthwork construction was performed 24/7, and cold weather seaming was implemented on the geomembrane.

EDUCATION

- Bachelor of Science in Business Management, Malone College, 2001
- Associate's Degree in Architectural Technology, University of Toledo, 1992

CERTIFICATIONS/AFFILIATIONS

- GCI-ICP Certified in Geosynthetics, 2008
- GCI-ICP Certified in Compacted Clay Liners, 2008
- OSHA 29 CFR 1926, 10 Hour Construction Industry Outreach, 2011
- OSHA 29 CFR 1910.96, Radiation Safety Training for Nuclear Density Gauges, 2006
- OSHA 29 CFR 1910.120, 40 Hr. Safety Course for Hazardous Waste, 2008
- OSHA 29 CFR 1010.120, 8 Hr. Refresher course for Hazardous Waste, Current
- MSHA Part 46, Surface Miner
- Transportation Worker Identification Credentials (TWIC)
- ASTM International, Member
- International Association of Geosynthetic Installers (IAGI), Examination Proctor

ADDITIONAL REPRESENTATIVE PROJECT EXPERIENCE

- **Geosynthetics, MSWL, Landfill Closure, SE Ohio, 2011**
  CQA assistant for HDPE geomembrane installation.

- **Geosynthetics, MSWL, Separatory Liner, SW Ohio, 2011**
  CQA assistant for HDPE geomembrane installation.

- **Geosynthetics, IWL, New Cell Construction, West Virginia, 2011**
  CQA assistant for PVC geomembrane installation for valley filling operation. Observed both solvent and thermal welding procedures.

- **Geotechnical and Geosynthetics, Sunny Farms Landfill, Fostoria, Ohio, 2009**
  Lead CQA for 10.5-acre new cell construction on geosynthetics and leachate collection system, including forcemain addition. Project utilized 60 mil textured HDPE, geotextile, geocomposite, HD pipe, gravel drainage wrap, and sand/tire protection layer.

- **Geotechnical and Geosynthetics, SW Tennessee, 2009**
  Lead Earthwork CQA on 17-acre new cell construction utilizing recompacted soil liner. Assisted on 60 mil HDPE geomembrane, and geocomposite drainage layer.

- **Geotechnical and Geosynthetics, Sunny Farms Landfill, Fostoria, Ohio, 2008-2009**

Lead CQA for 8-acre cap involving a 1.5' recompacted soil barrier layer (RSBL), 40 mil LLDPE geomembrane, and protective and vegetative covers. Performed waste grade verification surveys using GPS, borrow lane staking, and certification surveys. Because contractor did not complete the RSBL prior to winter, the soils were reworked in 2009 prior to geomembrane installation—which was based off of CQA lift maps to assure soils of extreme proctor values were not mixed.

- **Geotechnical, Dairy Manure Settling Basins, Indiana, Ohio, Michigan, 2007**
  Lead CQA on 4 construction projects of manure settling basins totaling over 28 acres and over 50,000 CY of recompacted soil liners. These projects involved a variety of characteristics among the approved construction soils. 4 of these ponds totaling 9 acres were entirely constructed according to RSL specifications even though portions could have been constructed to structural fill specifications which were less stringent. An 8 acre project in Indiana and a 7 acre project in Ohio each utilized 15,000 CY of structural fill, while another Ohio pond utilized 15,000 CY of engineered fill—in addition to the RSL.

- **Geotechnical and Geosynthetics, SW Tennessee, 2009**
  Lead Earthwork CQA on 17-acre new cell construction utilizing recompacted soil liner. Assisted on 60 mil HDPE geomembrane, and geocomposite drainage layer.

- **Geotechnical and Geosynthetics, Northwest Ohio, 2008**
  Assistant CQA on 6.5-acre new cell construction utilizing recompacted soil liner, 60 mil HDPE geomembrane, and geotextile protective layer. Due to contractor restraints, a night shift was added for clay liner construction.

- **Geotechnical – NW Ohio, 2007**
  Lead CQA monitor for a 2-acre cap comprised of recompacted clay.

- **Geosynthetics & Geotechnical – Phase 5 A&B, Sunny Farms Landfill; Fostoria, Ohio, 2006**
  CQA for 14.6-acre new cell single composite liner system, which utilized recompacted clay, 60 mil HDPE textured geomembrane, geocomposite, and a drainage/protective layer made of shredded tires. A leachate collection system and force-main were also installed.

- **Geosynthetics & Geotechnical – Phase 3 Cap, Sunny Farms Landfill; Fostoria, Ohio, 2006**
  CQA for single composite liner system, which utilized recompacted clay, 40 mil LLDPE geomembrane, geocomposite, and random vegetative soil layers.

- **Geosynthetics – Central Ohio, 2006**
  Lead CQA for 5-acre single composite liner system, which utilized 60 mil HDPE geomembrane.

- **Geosynthetics & Geotechnical – Phase 4B, Sunny Farms Landfill; Fostoria, Ohio, 2006**
  CQA for 7-acre single composite liner system, which utilized recompacted clay, 60 mil HDPE geomembrane, geocomposite, and a drainage/protective layer made of shredded tires to ensure conformance to design specifications.

Xavier Smith
CQA Technician

PROFESSIONAL BACKGROUND

Mr. Smith has experience in Geosynthetics CQA performing inspections, observations and documentation for over 40 acres and earthwork for over 20 acres.

His duties have included the following:

- Sub-grade inspection
- Geomembrane deployment; inspection of panels, confirming approved inventory, documentation
- Trial welds; Observation and documentation of testing procedures and results including visual examination of tested coupons.
- Subgrade inspection; Visual inspection of subgrade for deployment of geosynthetics, identifying problems and communication with the contractor for repair and follow-up.
- Welding; Observation, inspection and documentation of production HDPE welding. Visual examination of seams for anomalies and suspect welds.
- Non-Destructive Seam Testing including air pressure testing, vacuum box testing and holiday spark testing.
- Destructive seam testing: calculations of quantity of destructive seam samples to mark based on specified frequency, marking samples, shipping samples, related documentation and review of laboratory results.
- Repairs; Identifying geomembrane damages, marking for repair, observation of welding and subsequent testing and documentation.
- Daily review and cross-checking of field documentation.
- Lead CQA technician for geosynthetics – managing support personnel as needed.
- Density testing for earthwork.

CAREER HIGHLIGHTS

- **Geosynthetics, MSW Landfill Cell; Fostoria, OH**
  Provided CQA observation and documentation of the installation of 60mil HDPE and geotextile for 25.6-acre cell construction. Also observed and inspected leachate drainage layer and associated piping including the force main.

- **Geosynthetics, MSW Landfill Cell; Georgetown, OH**
  Provided Lead CQA observation and documentation of the installation of 60mil HDPE and geotextile for an approximate 15-acre cell construction.

- **Earthwork, MSW Landfill Cell; Fostoria, OH**
  Provided CQA observation and documentation for the earthwork phase of construction for an approximate 25-acre landfill cell. Performed in-place moisture/density testing, monitoring of lift construction, documenting data on a spreadsheet and lift maps and observations of excavations from the borrow area.

- **Select Waste Observation, MSW Landfill Cell; Fostoria, OH**
  Provided CQA observation and documentation for the placement of select waste, identifying issues and communication with the operators and crew when non-conforming issues were identified. Also worked to assist training of landfill personnel regarding the Select Waste requirements.

- **Data Review & Certification Report Preparation, MSW Landfill Cell; Onaway, MI**
  Assisted with the review of field documentation prior to inclusion in the final Certification Report for a MSW landfill cell utilizing both primary and secondary layers of geomembrane. Identified and communicated non-conforming data to the CQA Project Manager to be added to the punch list, researched in the field and corrected as needed.

TRAINING/CERTIFICATIONS

- OSHA 29 CFR 1910.96, Radiation Safety Training for Nuclear Density Gauges

APPENDIX B: PRE-CONSTRUCTION MATERIAL TESTING

APPENDIX B-1a:
GENERAL FILL

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: GF1

Field Description: Red Brown Sand #2845

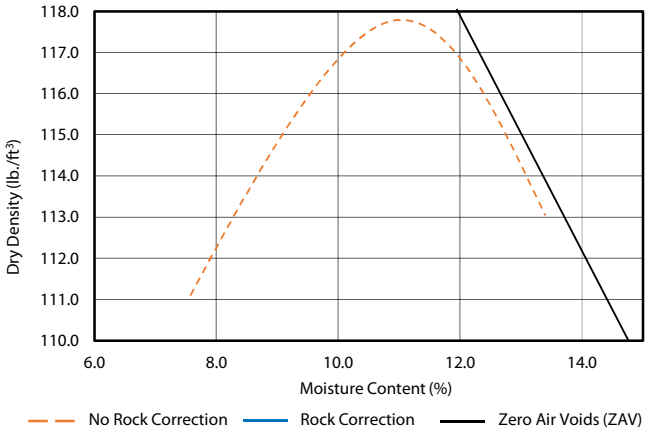
Proctor Compaction Test: Standard

ASTM D 698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

Test Type & Method: ASTM D 698 Method C

Preparation Method:	Dry	Drop Height (in):	12
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	3
Rammer Weight (lb.):	5.5 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Rock Correction: No

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 11.3 **Rock Corrected:**

Maximum Dry Density (lb./ft³): 117.9 **Rock Corrected:**

Specific Gravity (Assumed): 2.710

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: GF1

Field Description: Red Brown Sand #2845

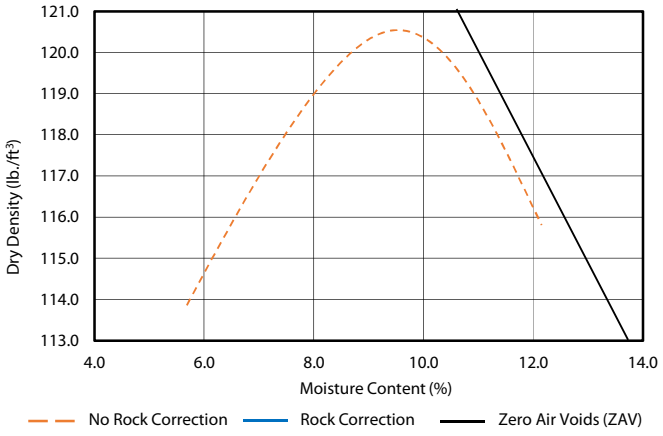
Proctor Compaction Test: Modified

ASTM D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

Test Type & Method: ASTM D 1557 Method C

Preparation Method:	Dry	Drop Height (in):	18
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	5
Rammer Weight (lb.):	10 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Rock Correction: No

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 9.7 **Rock Corrected:**

Maximum Dry Density (lb./ft^3): 120.6 **Rock Corrected:**

Specific Gravity (Assumed): 2.710

Coarse Specific Gravity:

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: GF2

Field Description: Brwon Silty Sand #2851

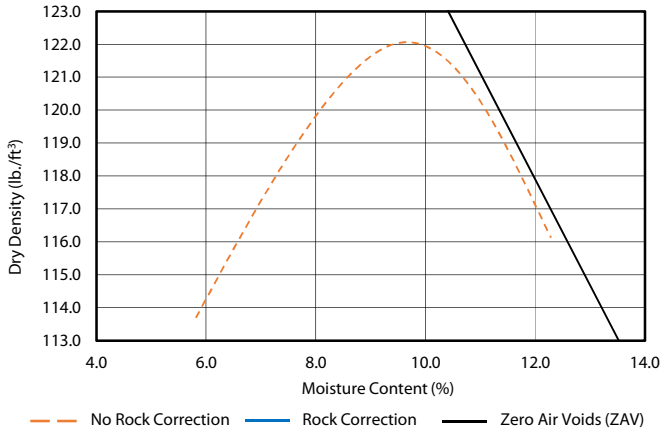
Proctor Compaction Test: Standard

ASTM D 698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

Test Type & Method: ASTM D 698 Method C

Preparation Method:	Dry	Drop Height (in):	12
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	3
Rammer Weight (lb.):	5.5 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Rock Correction: No

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 9.6 **Rock Corrected:**

Maximum Dry Density (lb./ft^3): 122.0 **Rock Corrected:**

Specific Gravity (Assumed): 2.710

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: GF2

Field Description: Brwon Silty Sand #2851

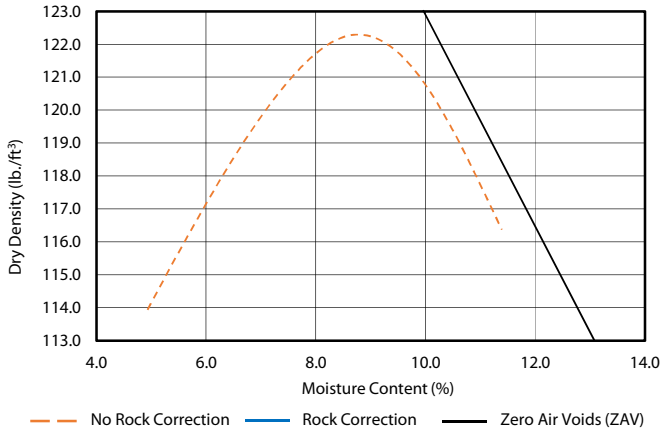
Proctor Compaction Test: Modified

ASTM D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

Test Type & Method: ASTM D 1557 Method C

Preparation Method:	Dry	Drop Height (in):	18
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	5
Rammer Weight (lb.):	10 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Rock Correction: No

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 8.9 **Rock Corrected:**

Maximum Dry Density (lb./ft³): 122.2 **Rock Corrected:**

Specific Gravity (Assumed): 2.710

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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APPENDIX B-1b:
STRUCTURAL FILL

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: SF1

Field Description: Tan Silty Sand w/ -3" Friable Caliche Agg #2843

Sieve Analysis Test: SA-1

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
75 mm	3"	100	
50 mm	2"	95	
25 mm	1"	91	
19.0 mm	3/4"	89	
12.5 mm	1/2"	86	
9.5 mm	3/8"	84	
4.75 mm	#4	80	
2.36 mm	#8	76	
2.0 mm	#10	74	
425 µm	#40	63	
180 µm	#80	34	
150 µm	#100	26	
75 µm	#200	14.1	

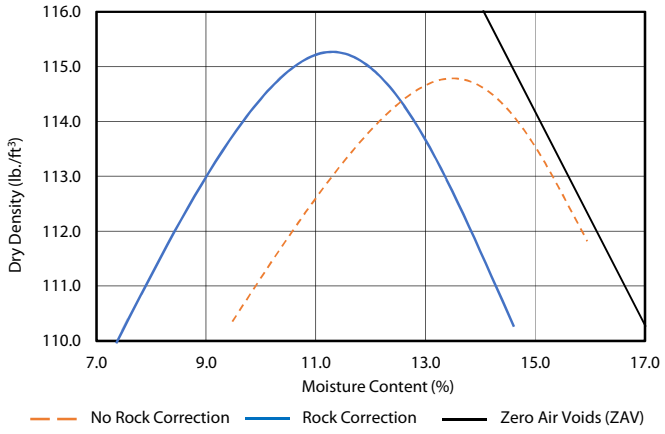
Proctor Compaction Test: **Modified**

ASTM D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

Test Type & Method: ASTM D 1557 Method C

Preparation Method:	Dry	Drop Height (in):	18
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	5
Rammer Weight (lb.):	10 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 19.8

% Sand: 66.1

% Fines 14.1

Copies To: DCP Operating

Rock Correction: **Yes**

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 13.3 **Rock Corrected:** 11.2

Maximum Dry Density (lb./ft³): 114.8 **Rock Corrected:** 115.3

Specific Gravity (Assumed): 2.710

Coarse Specific Gravity: 1.906

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Project: Misc Testing for CQA Solutions

Location: SF1

Project Number: 2022.1034

Field Description: Tan Silty Sand w/ -3" Friable Caliche Agg #2843

Sieve Analysis Test: SA-1

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
75 mm	3"	100	
50 mm	2"	95	
25 mm	1"	91	
19.0 mm	3/4"	89	
12.5 mm	1/2"	86	
9.5 mm	3/8"	84	
4.75 mm	#4	80	
2.36 mm	#8	76	
2.0 mm	#10	74	
425 µm	#40	63	
180 µm	#80	34	
150 µm	#100	26	
75 µm	#200	14.1	

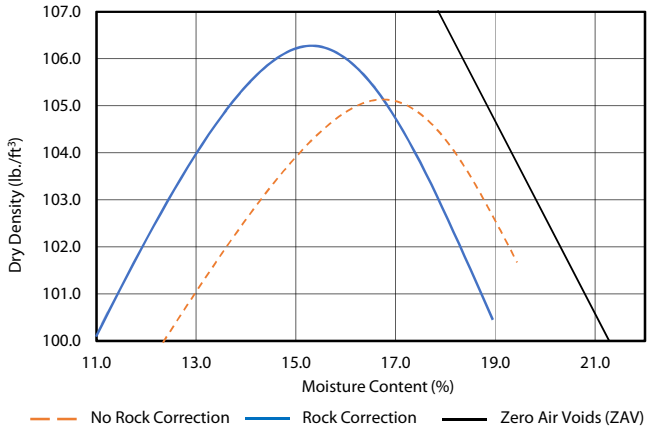
Proctor Compaction Test: **Standard**

ASTM D 698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

Test Type & Method: ASTM D 698 Method C

Preparation Method:	Dry	Drop Height (in):	12
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	3
Rammer Weight (lb.):	5.5 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 19.8

% Sand: 66.1

% Fines 14.1

Copies To: DCP Operating

Rock Correction: **Yes**

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%): 16.9 **Rock Corrected:** 15.4

Maximum Dry Density (lb./ft³): 105.1 **Rock Corrected:** 106.3

Specific Gravity (Assumed): 2.710

Coarse Specific Gravity: 1.906

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Project: Misc Testing for CQA Solutions

Location: SF2

Project Number: 2022.1034

Field Description: Red Tan Silty Sand w/ -3" Friable Caliche Agg #2842

Sieve Analysis Test: SA-2

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
75 mm	3"	100	
50 mm	2"	96	
25 mm	1"	93	
19.0 mm	3/4"	92	
12.5 mm	1/2"	90	
9.5 mm	3/8"	89	
4.75 mm	#4	86	
2.36 mm	#8	83	
2.0 mm	#10	83	
425 µm	#40	75	
180 µm	#80	43	
150 µm	#100	32	
75 µm	#200	13.9	

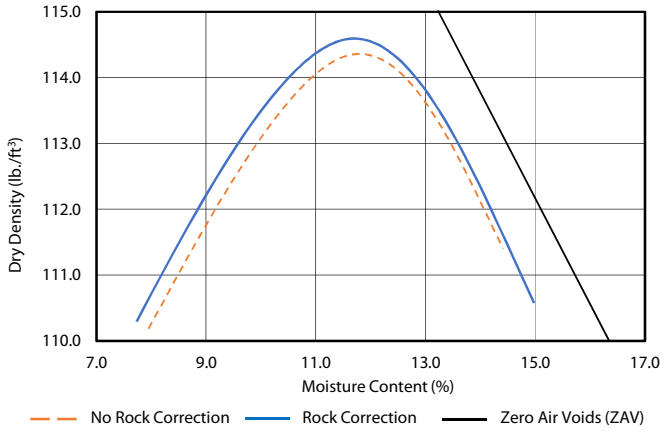
Proctor Compaction Test: **Modified**

ASTM D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

Test Type & Method: ASTM D 1557 Method C

Preparation Method:	Dry	Drop Height (in):	18
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	5
Rammer Weight (lb.):	10 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 14.3

% Sand: 71.8

% Fines 13.9

Copies To:

Rock Correction: **Yes**

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%):	12.6	**Rock Corrected:**	11.5
Maximum Dry Density (lb./ft³):	114.4	**Rock Corrected:**	114.7
Specific Gravity (Assumed):	2.710		
Coarse Specific Gravity:	1.899		

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Location: SF2

Field Description: Red Tan Silty Sand w/ -3" Friable Caliche Agg #2842

Sieve Analysis Test: SA-2

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
75 mm	3"	100	
50 mm	2"	96	
25 mm	1"	93	
19.0 mm	3/4"	92	
12.5 mm	1/2"	90	
9.5 mm	3/8"	89	
4.75 mm	#4	86	
2.36 mm	#8	83	
2.0 mm	#10	83	
425 µm	#40	75	
180 µm	#80	43	
150 µm	#100	32	
75 µm	#200	13.9	

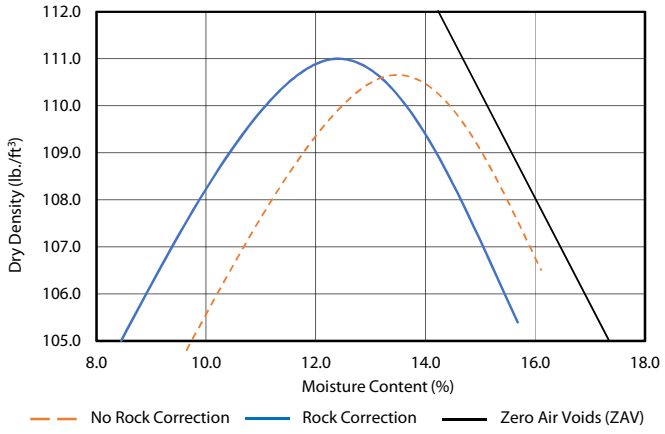
Proctor Compaction Test: **Standard**

ASTM D 698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3))

Test Type & Method: ASTM D 698 Method C

Preparation Method:	Dry	Drop Height (in):	12
Rammer Type:	Mechanical	Mold Diameter (in):	6
Rammer Face:	Circular	No. of Layers:	3
Rammer Weight (lb.):	5.5 lb	Blows per Layer:	56

Moisture-Density Relationship:



Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 14.3

% Sand: 71.8

% Fines 13.9

Rock Correction: **Yes**

ASTM D 4718 Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

Optimum Moisture Content (%):	13.6	**Rock Corrected:**	12.2
Maximum Dry Density (lb./ft³):	110.7	**Rock Corrected:**	111.0
Specific Gravity (Assumed):	2.710		
Coarse Specific Gravity:	1.899		

ASTM D 4718 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

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BY: _____
Texas PE No. 101804

BY: _____
NM PE No. 10871

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BEYOND Engineering & Testing

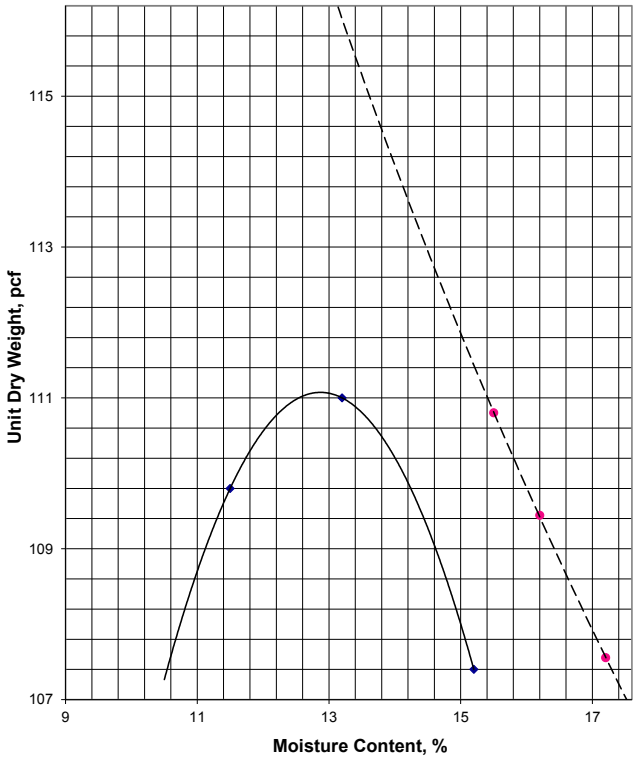
www.BeyondET.com
West Texas
3011-B South County Road 1260
Midland, TX 79706
432.561.5780

TO: CQA Solutions
Attn: Brent Duganiero
723 Phillips Ave. Bld. A, Suite 201
Toledo, OH 43612

PROJECT: North Ranch
LOCATION: 32.14000, -103.46000
Jal , NM 88252
PROJECT NO.: WT2202047

DATE: March 28, 2022
REPORT NO.: 202047.0324.6448A

MOISTURE - DENSITY RELATIONSHIP



MATERIAL DESCRIPTION: Tan Silty Sand

SAMPLE LOCATION: SF-3

SAMPLED BY: Client
DATE SAMPLED: 3/24/2022

SAMPLE NO.: S22-296
SAMPLE RECEIVED DATE: 3/24/2022

Test Method: **ASTM D698-12**

Preparation Method: Moist
Rammer: Mechanical
Compaction Method: A

Compactor: Rainhart Compactor
Identification No.: BET01-43-002
Calibrated Date: January 14, 2022
Test Date: 3/26/2022
Test By: Daniela Navarrete

Test Method: **ASTM C6913** and **D1140**

Sieve Analysis

Sieve Size	*% Retained*	*Specification*
2 1/2"	0	N/A
1 3/4"	0	-
3/4"	0	-
3/8"	0	-
No. 4	0	-
No. 40	4	-
No. 200	84.6	N/A

CURVE RESULTS

Maximum Dry Unit Weight (pcf):	**111.1**
Optimum Moisture Content (%):	**12.9%**

Test Method: **ASTM D4318**

Atterberg Limits

Parameter	**Results**	*Specification*
LL	-	N/A
PL	-	-
PI	Non Plastic	N/A

SOIL CLASSIFICATION PER ASTM D2487
Silty sand (SM)

Beyond Engineering and Testing, LLC

Quality Review

BEYOND Engineering & Testing

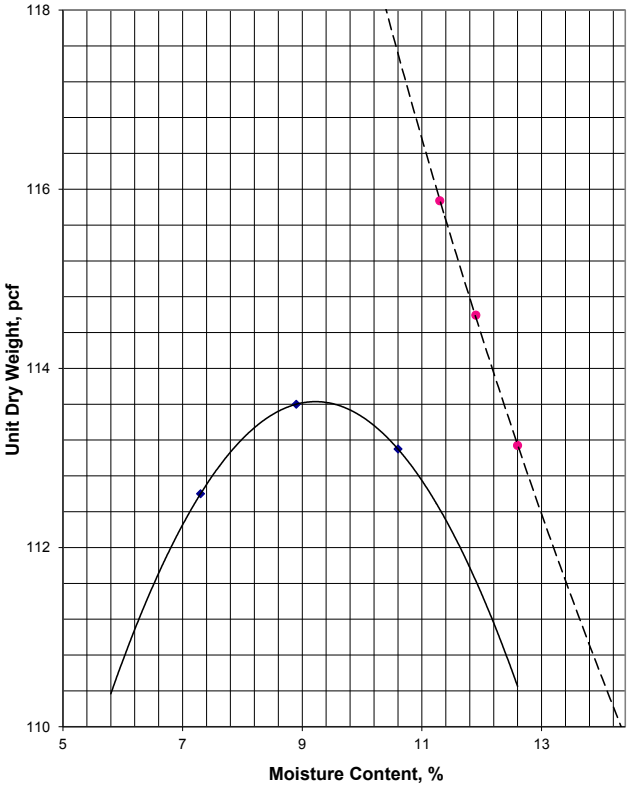
www.BeyondET.com
West Texas
3011-B South County Road 1260
Midland, TX 79706
432.561.5780

TO: CQA Solutions
Attn: Brent Duganiero
723 Phillips Ave. Bld. A, Suite 201
Toledo, OH 43612

PROJECT: North Ranch
LOCATION: 32.14000, -103.46000
Jal , NM 88252
PROJECT NO.: WT2202047

DATE: March 28, 2022
REPORT NO.: 202047.0324.6448B

MOISTURE - DENSITY RELATIONSHIP



MATERIAL DESCRIPTION: Tan Silty Sand

SAMPLE LOCATION: SF-3

SAMPLED BY: Client
DATE SAMPLED: 3/24/2022

SAMPLE NO.: S22-297
SAMPLE RECEIVED DATE: 3/24/2022

Test Method: ASTM D1557-12

Preparation Method: Moist
Rammer: Mechanical
Compaction Method: A

Compactor: Rainhart Compactor
Identification No.: BET01-43-002
Calibrated Date: January 14, 2022
Test Date: 3/26/2022
Test By: Alondra Rodriguez

Test Method: ASTM D6913 and D1140

Sieve Analysis

Sieve Size	*% Retained*	*Specification*
2 1/2"	0	N/A
1 3/4"	0	-
7/8"	0	-
3/8"	0	-
No. 4	0	-
No. 40	6	-
No. 200	87.9	N/A

CURVE RESULTS

Maximum Dry Unit Weight (pcf):	**113.6**
Optimum Moisture Content (%):	**9.2%**

Test Method: ASTM D4319

Atterberg Limits

Parameter	Results	Specification
LL	-	N/A
PL	-	-
PI	Non Plastic	N/A

SOIL CLASSIFICATION PER ASTM D2487
Silty sand (SM)

Beyond Engineering and Testing, LLC

Quality Review

APPENDIX B-1d:
PROTECTIVE COVER

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs NM 88240
T 575 393 9827 F 575 393 1543 Pettigrew.us

LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Project: Misc Testing for CQA Solutions

Location: PC-1

Project Number: 2022.1034

Field Description: Light Brown Silty Sand #2844

Sieve Analysis Test: SA-3

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
4.75 mm	#4	100	
2.36 mm	#8	100	
2.0 mm	#10	99	
425 µm	#40	97	
180 µm	#80	32	
150 µm	#100	28	
75 µm	#200	17.9	

ASTM D4373 Calcium Carbonate

Lab reading: 0.9% of Total sample by weight

Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 0.0

% Sand: 82.1

% Fines 17.9

Copies To:

PETTIGREW & ASSOCIATES, P.A.

BY: _____
Texas PE No. 101804

BY: _____
NM PE No. 10871

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs NM 88240
T 575 393 9827 F 575 393 1543 Pettigrew.us

LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Date of Test: February 25, 2022

Sample Date: February 22, 2022

Project: Misc Testing for CQA Solutions

Project Number: 2022.1034

Location: PC-2

Field Description: Red Silty Sand #2849

Sieve Analysis Test: SA-4

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
4.75 mm	#4	100	
2.36 mm	#8	100	
2.0 mm	#10	100	
425 µm	#40	98	
180 µm	#80	59	
150 µm	#100	45	
75 µm	#200	19.7	

ASTM D4373 Calcium Carbonate

Lab reading: 0.6% of Total sample by weight

Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 0.0

% Sand: 80.3

% Fines 19.7

Copies To:

PETTIGREW & ASSOCIATES, P.A.

BY: _____
Texas PE No. 101804

BY: _____
NM PE No. 10871

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs NM 88240
T 575 393 9827 F 575 393 1543 Pettigrew.us

LABORATORY TEST REPORT

AASHTO R18

To: CQA Solutions
723A Phillips Ave
Toledo, OH 43612

Date of Test: February 22, 2022

Sample Date: February 19, 2022

Project: Misc Testing for CQA Solutions

Location: PC-3

Project Number: 2022.1034

Field Description: Red Silty Sand #2850

Sieve Analysis Test: SA-5

ASTM C 117 Materials Finer Than 75-µm (No.200) Sieve in Mineral Aggregates by Washing

ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates

Sieve Size		% Passing	Required Limits
4.75 mm	#4	100	
2.36 mm	#8	100	
2.0 mm	#10	100	
425 µm	#40	98	
180 µm	#80	60	
150 µm	#100	44	
75 µm	#200	19.2	

ASTM D4373 Calcium Carbonate

Lab reading: 0.5% of Total sample by weight

Liquid Limit, Plastic Limit and Plasticity Index Test:

ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils

LL Method: A - Multipoint **Liquid Limit (LL):** NV

Preparation Method: Dry **Plastic Limit (PL):** NV

PI Method: Oven Dried **Plasticity Index (PI):** NP

NP - Non Plastic

Soil Classification: SM - Silty Sand

ASTM D 2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

% Gravel: 0.0

% Sand: 80.8

% Fines 19.2

Copies To:

PETTIGREW & ASSOCIATES, P.A.

BY: _____
Texas PE No. 101804

BY: _____
NM PE No. 10871

APPENDIX C: CONSTRUCTION DRAWINGS, RECORD DRAWINGS, AND AS-BUILT SURVEYS

APPENDIX C-1: CONSTRUCTION DRAWINGS

DRAWINGS FOR THE

CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION

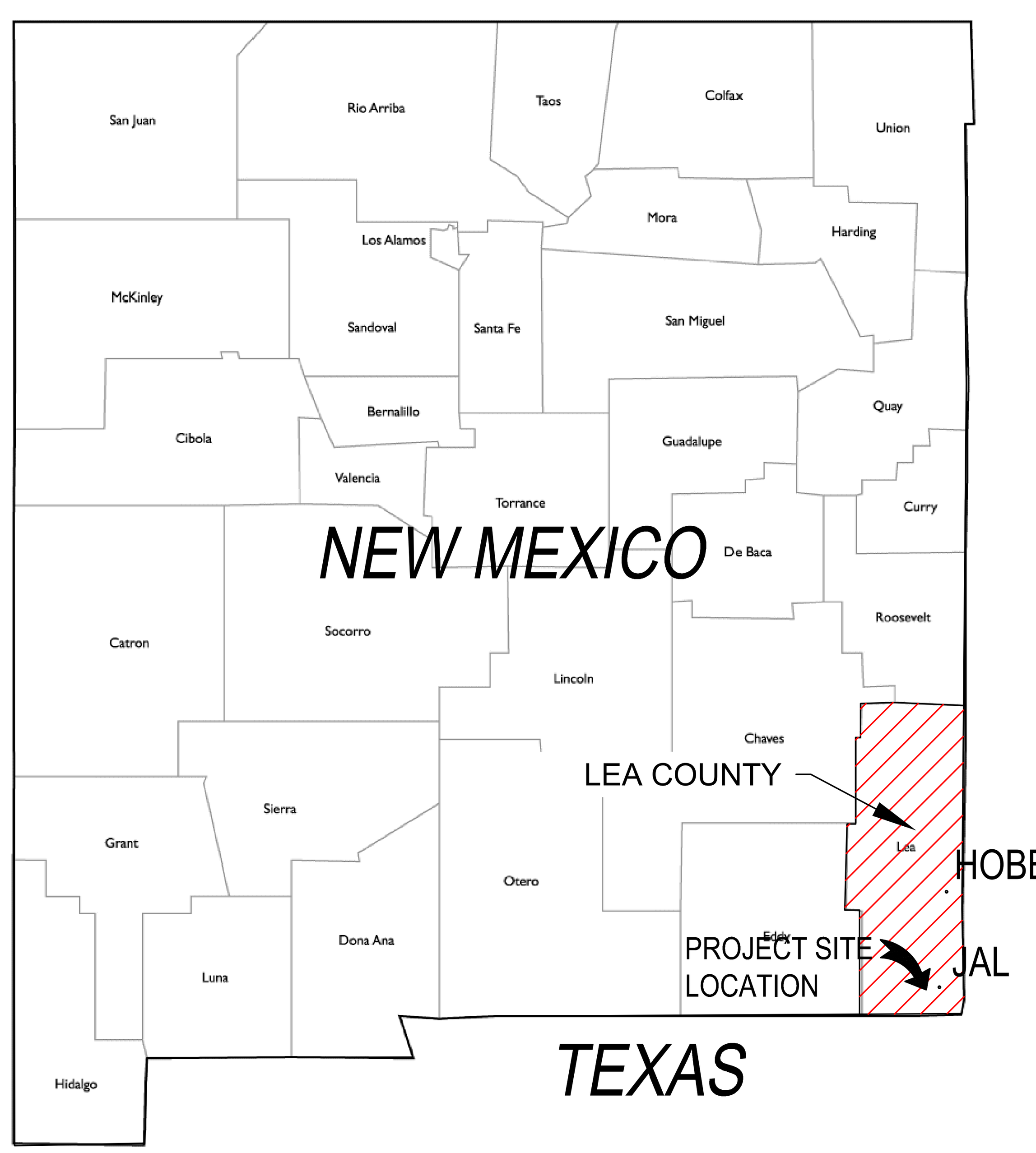
AT THE

NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY

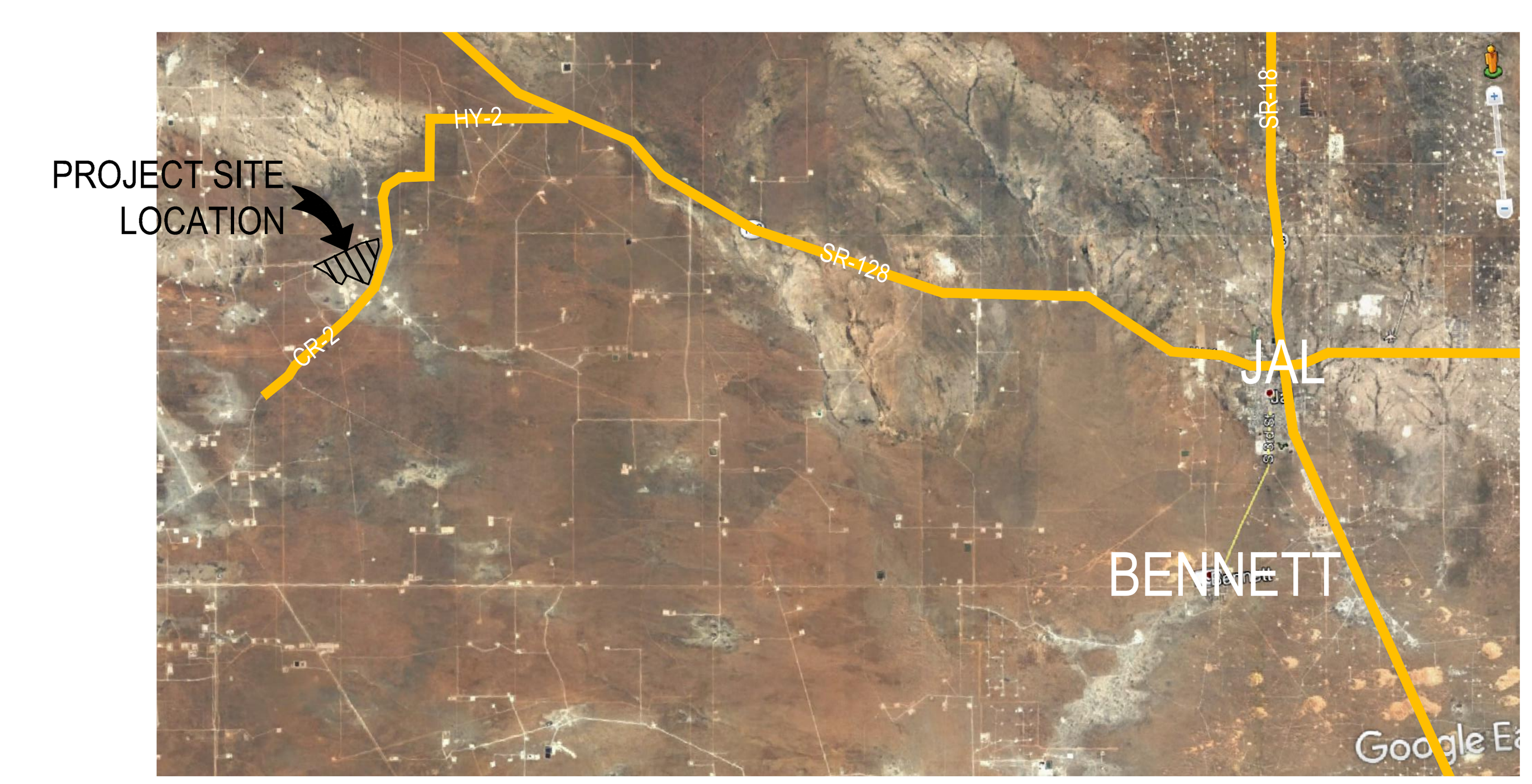
COUNTY ROAD 2
LEA COUNTY, NEW MEXICO 88252

PREPARED FOR

HIGH ROLLER EPC



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: COVER SHEET

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS, NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY, LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE, SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: F:/ENGINEERS

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 1

INDEX OF DRAWINGS

DRAWING NO.	REVISION NO.	REVISION DATE	TITLE
1.	1	02/2022	COVER SHEET
2.	1	02/2022	INDEX SHEET
3.	1	02/2022	EXISTING CONDITIONS AND OVERALL SITE DEVELOPMENT PLAN
4.	1	02/2022	SITE CONSTRUCTION DEVELOPMENT PLAN
5PL.	1	02/2022	YARD INFRASTRUCTURE GRADING PLAN
5PR.	1	02/2022	YARD INFRASTRUCTURE GRADING PLAN - STORMWATER POND PROFILE
6PL.	1	02/2022	LEACHATE POND GRADING PLAN AND DETAILS
6PR.	1	02/2022	LEACHATE POND GRADING PROFILES AND DETAILS
6CT.	1	02/2022	LEACHATE POND LINER CERTIFICATION GRID
7PL.	1	02/2022	DISPOSAL CELL E-1 GRADING PLAN AND DETAILS
7PR.	1	02/2022	DISPOSAL CELL E-1 GRADING PROFILES AND DETAILS
7CT-1	1	02/2022	DISPOSAL CELL E-1 CERTIFICATION GRID AND DETAILS
7CT-2	1	02/2022	DISPOSAL CELL E-1 CERTIFICATION GRID TABLES
8PL.	1	02/2022	GRAVEL/CALICHE ROADWAY GRADING PLAN AND DETAILS
8PR.	1	02/2022	GRAVEL/CALICHE ROADWAY GRADING CONTROL POINTS TABLES
9PL.	1	02/2022	TRUCK WASH AND DRYING PAD EXCAVATION PLAN
9TW.	1	02/2022	TRUCK WASH TYPICAL DIMENSIONS AND DETAILS
9DP.	1	02/2022	DRYING PAD TYPICAL DIMENSIONS AND DETAILS
10PL.	1	02/2022	LEACHATE FORCEMAIN CONSTRUCTION PLAN
10DET.	1	02/2022	LEACHATE FORCEMAIN DETAILS
11.	1	02/2022	MISCELLANEOUS DETAILS

CONTACT INFORMATION

OWNER:
NGL WASTE SERVICES, LLC (HIGH ROLLER EPC)
ATTENTION: RAVI VEMULAPALLI
1008 SOUTHVIEW CIRCLE
CENTER, TX 75935

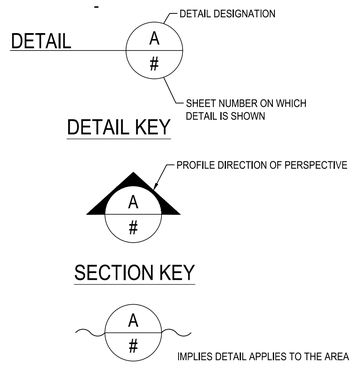
ENGINEER:
SCS ENGINEERS
ATTENTION: MICHAEL BRADFORD, P.E. - ENGINEER OF RECORD
6100 MAPLE AVENUE
TEMPE, ARIZONA 85283

REGULATORY AUTHORITY:
STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DRIVE
SANTA FE, NEW MEXICO 87505
PHONE: (505) 476-3460

GENERAL NOTES

1. EXISTING CONTOURS SHOWN ON THESE PLANS ARE BASED ON AN AERIAL SURVEY AND VARIOUS FIELD SURVEYS. CARE SHOULD BE TAKEN WHEN INTERPRETING CONTOURS TO VERIFY THE AREAS AND THE TRANSITIONS BETWEEN THEM.
2. EXISTING FACILITIES AND FEATURES ARE SHOWN LIGHT-LINED AND/OR SCREENED. NEW FACILITIES AND FEATURES ARE SHOWN SOLID AND HEAVY-LINED. IN GOOD FAITH EXISTING UTILITIES SHOWN WERE LOCATED BASED ON HISTORICAL SITE INFORMATION, AS-BUILT RECORDS, VISIBLE SURVEY MARKERS, AND UTILITY LOCATE INFORMATION PROVIDED BY THE OWNER. THIS DOES NOT ABSOLVE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM AN INDEPENDENT SUBSURFACE UTILITY LOCATION VERIFICATION PRIOR TO BEGINNING EXCAVATION ACTIVITIES. DAMAGE TO ANY UTILITY KNOWN OR UNKNOWN AS INDICATED IN THESE DRAWINGS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. SLOPES AND GRADES ARE IN UNITS OF FT(H):FT(V) OR %, RESPECTIVELY, UNLESS OTHERWISE NOTED.
4. THESE DRAWINGS WERE PREPARED IN ACCORDANCE WITH NEW MEXICO ADMINISTRATIVE CODE 19.15.36 REGULATING SURFACE WASTE MANAGEMENT FACILITY UNDER THE GOVERNING AUTHORITY OF NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT - OIL CONSERVATION DIVISION; AND THE FACILITY'S OPERATING PERMIT (#NM1-66) DATED MAY 20, 2021.
5. EXISTING TOPOGRAPHIC CONTOURS SHOWN IN THESE PLANS ARE BASED ON A GROUND SURVEY PERFORMED BY SURVEYING AND MAPPING (SAM) ON NOVEMBER 30, 2018. SURVEY BENCH MARKS AND CONTROL FOR THIS FACILITY ARE IN THE NAD83 STATE PLANE NEW MEXICO EAST ZONE (NM_E) HORIZONTAL COORDINATE SYSTEM AND THE NAVD88 VERTICAL DATUM AND CAN BE COORDINATED AND VERIFIED DIRECTLY BY CONTACTING SAM IN MIDLAND, TEXAS AT 432-699-0601, REFERENCE SAM JOB NUMBER 1118046564.
5. PROPERTY AND LEGAL BOUNDARY LINES SHOWN IN THESE PLANS ARE BASED ON A ALTA SURVEY PERFORMED BY SURVEYING AND MAPPING (SAM) ON IN AUGUST 2018. THE FACILITY'S PERMIT BOUNDARY SHOWN ON THESE PLANS IS AS DELINEATED IN THE APPROVED FACILITY OPERATING PERMIT (#NM1-66). FOR INFORMATION REGARDING PROPERTY AND LEGAL BOUNDARIES SHOWN CONTACT SAM IN MIDLAND, TEXAS AT 432-699-0601, REFERENCE SAM JOB NUMBER 1018044265.
6. THE EROSION AND SEDIMENT CONTROL FEATURES REQUIRED BY THESE PLANS ARE THE MINIMUM FEATURES REQUIRED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PLAN CONSTRUCTION STORMWATER CONTROLS TO PROTECT THE PROJECT AND WORK AREA. DAMAGE DONE TO WORK BY STORMWATER AS A RESULT OF INADEQUATE STORMWATER CONTROL PLANNING WILL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PREPARE AND MAINTAIN ONSITE A CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN COMPLIANT WITH LOCAL GOVERNING REGULATIONS AND OBTAIN REQUIRED CONSTRUCTION STORMWATER CONTROL PERMITS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
8. IN THE CASE OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND THE ASSOCIATED CONSTRUCTION SPECIFICATIONS, THE PLANS WILL GOVERN UNLESS SPECIFICALLY STATED BY THE ENGINEER.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE CONSTRUCTION ACTIVITIES WITH LOCAL TRANSPORTATION AUTHORITIES AND OBTAIN TRAFFIC CONTROL PERMITS. CONSTRUCTION ACTIVITIES MUST ALSO BE COORDINATED WITH ADJACENT OIL AND GAS FIELD ASSOCIATED OPERATIONS. DELAYS IN CONSTRUCTION DUE TO INADEQUATE COORDINATION AND PLANNING WILL NOT BE COMPENSATED.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR BRINGING TO THE OWNER AND ENGINEER'S ATTENTION ANY CONSTRUCTION ELEMENT THAT HAS NOT BEEN ADDRESSED IN THESE DRAWINGS OR SEEN TO BE DIFFERENT FROM THE LIKE ELEMENT DESCRIBED IN THESE DRAWINGS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A CLEAN WORK AREA. REMOVAL OF ALL CONSTRUCTION RELATED WASTE MATERIAL FROM THE WORK AREA SHALL BE ROUTINELY REMOVED AND DISPOSED AT A NEW MEXICO PERMITTED SOLID WASTE FACILITY. ADDITIONAL COMPENSATION WILL NOT BE GIVEN FOR WASTE REMOVAL AND DISPOSAL. ALL REMAINING CONSTRUCTION WASTE MUST BE REMOVED AT THE COMPLETION OF THE PROJECT.

SECTION/DETAIL KEY



ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: INDEX SHEET

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

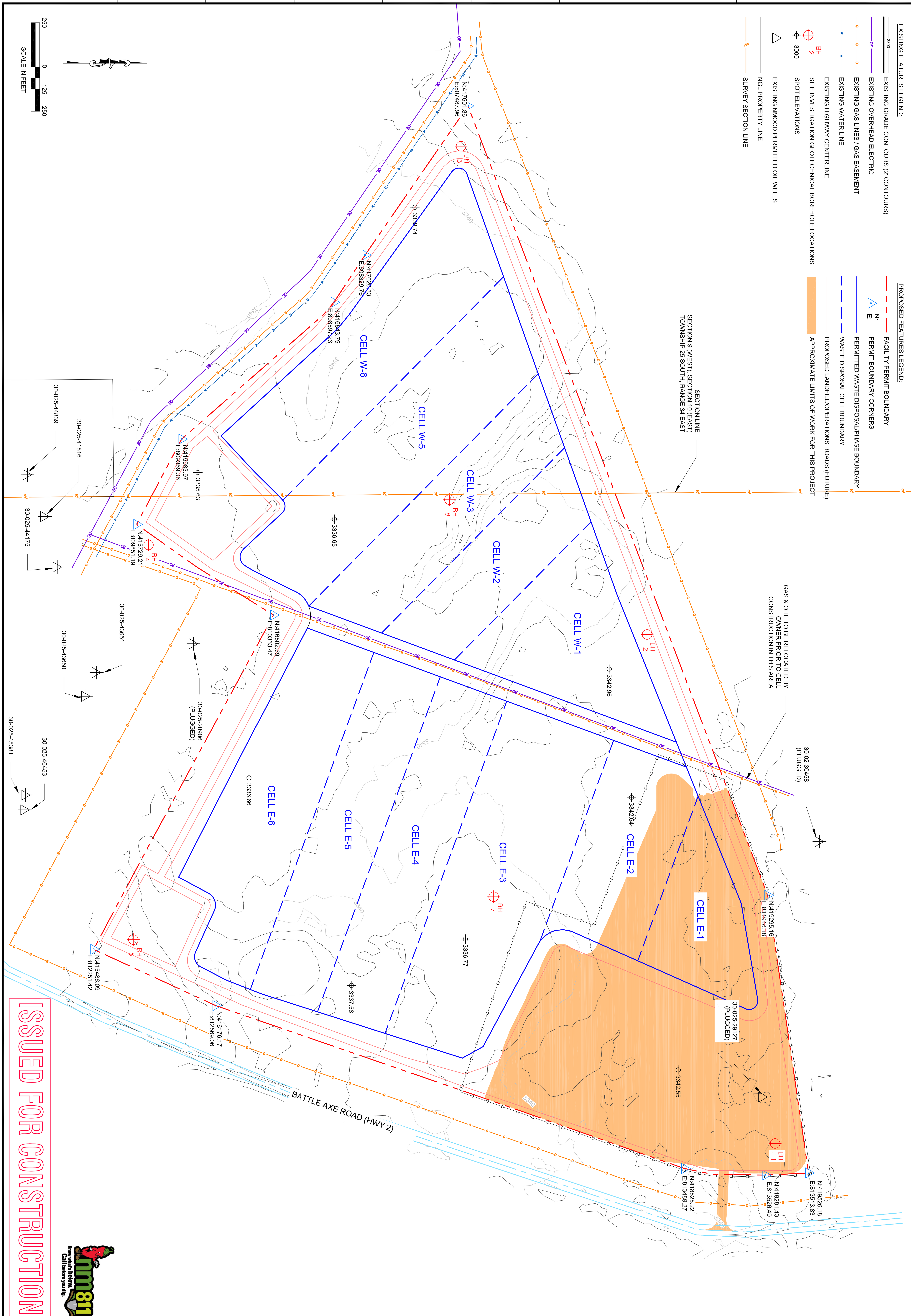
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX (562) 427-0805

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 2


EXISTING FEATURES LEGEND:
EXISTING GRADE CONTOURS (2' CONTOURS)
EXISTING OVERHEAD ELECTRIC
EXISTING GAS LINES / GAS EASEMENT
EXISTING WATER LINE
EXISTING HIGHWAY CENTERLINE
SITE INVESTIGATION GEOTECHNICAL BOREHOLE LOCATIONS
SPOT ELEVATIONS
EXISTING NMOCD PERMITTED OIL WELLS
NGL PROPERTY LINE
SURVEY SECTION LINE
PROPOSED FEATURES LEGEND:
FACILITY PERMIT BOUNDARY
PERMIT BOUNDARY CORNERS
PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
WASTE DISPOSAL CELL BOUNDARY
PROPOSED LANDFILL/OPERATIONS ROADS (FUTURE)
APPROXIMATE LIMITS OF WORK FOR THIS PROJECT
SECTION LINE
SECTION 9 (WEST), SECTION 10 (EAST)
TOWNSHIP 25 SOUTH, RANGE 34 EAST
GAS & OHE TO BE RELOCATED BY OWNER PRIOR TO CELL CONSTRUCTION IN THIS AREA
CELL W-6
CELL W-5
CELL W-3
CELL W-2
CELL W-1
CELL E-6
CELL E-5
CELL E-4
CELL E-3
CELL E-2
CELL E-1
BATTLE AXE ROAD (HWY 2)
30-025-29127 (PLUGGED)
30-02-30458 (PLUGGED)
30-025-20906 (PLUGGED)
30-025-4839
30-025-41816
30-025-44175
30-025-43651
30-025-43650
30-025-46453
30-025-45381
N:417601.86 E:807487.96
N:417020.33 E:808329.76
N:416843.79 E:808597.23
N:415983.97 E:809369.36
N:415729.21 E:809851.19
N:416502.69 E:810363.47
N:415486.09 E:812251.42
N:416176.17 E:812569.06
N:418825.22 E:813459.27
N:419281.43 E:813526.49
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3339.74
3335.63
3336.65
3342.96
3336.66
3342.64
3336.77
3337.58
3342.55
SCALE IN FEET
250 0 125 250
ISSUED FOR CONSTRUCTION

SCS ENGINEERS

ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

PROJ. NO.	DWN. BY:	ACAD FILE:
01222034.00	MPB	F:/ENGINEERS
DSN. BY: MPB	CHK. BY: -	APP. BY: MPB

SHEET: 3
SCALE: AS SHOWN
DATE: 02-16-2022

CLIENT: HIGH ROLLER EPC

SHEET TITLE: EXISTING CONDITIONS AND OVERALL SITE DEVELOPMENT PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

NO.	REVISION	DATE

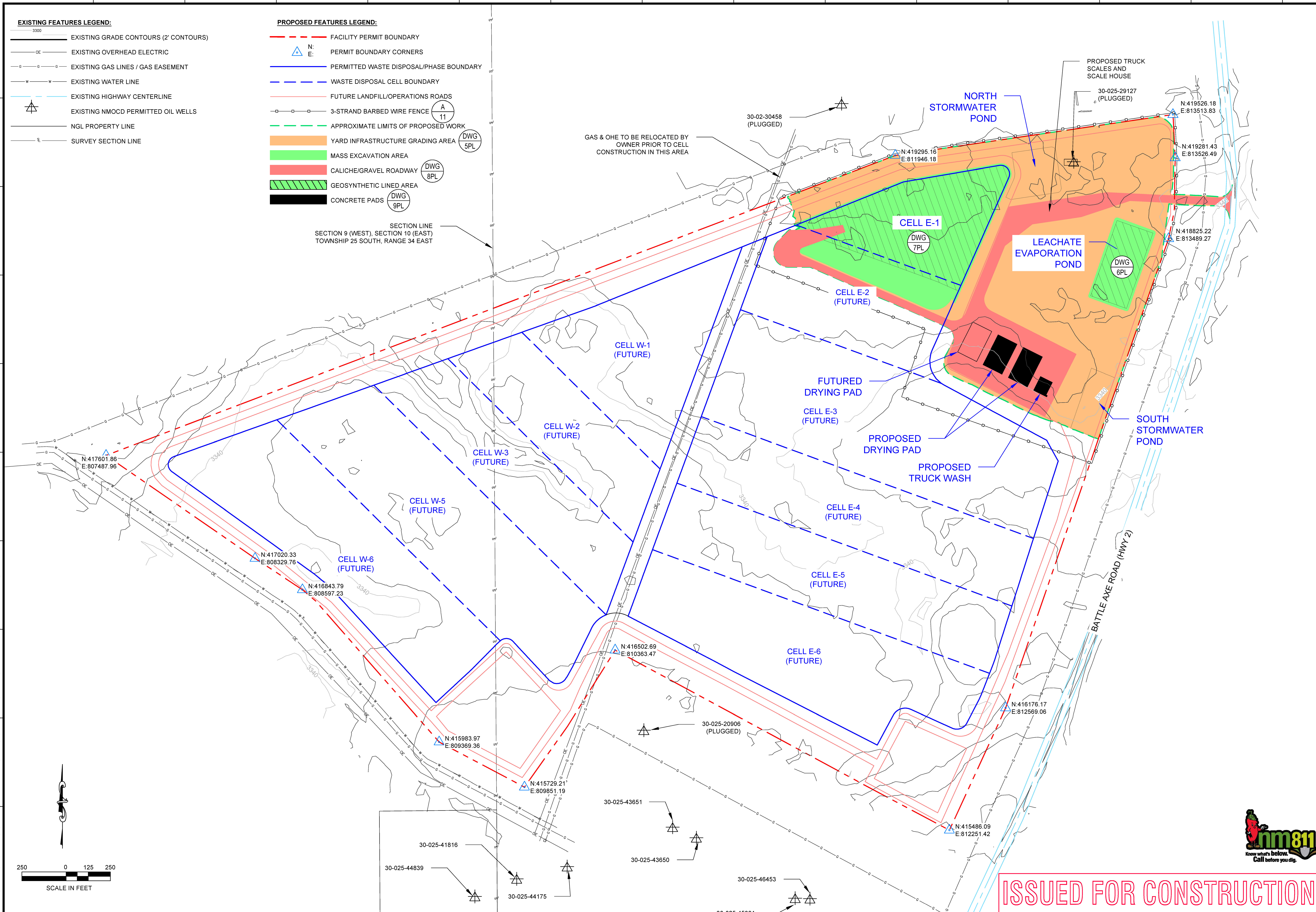
MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER

EXISTING FEATURES LEGEND:

- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING WATER LINE
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS
- NGL PROPERTY LINE
- SURVEY SECTION LINE

PROPOSED FEATURES LEGEND:

- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS (N: E:)
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- FUTURE LANDFILL/OPERATIONS ROADS
- 3-STRAND BARBED WIRE FENCE (A / 11)
- APPROXIMATE LIMITS OF PROPOSED WORK
- YARD INFRASTRUCTURE GRADING AREA (DWG 5PL)
- MASS EXCAVATION AREA
- CALICHE/GRAVEL ROADWAY (DWG 8PL)
- GEOSYNTHETIC LINED AREA
- CONCRETE PADS (DWG 9PL)



ISSUED FOR CONSTRUCTION

nm811 Know what's below. Call before you dig.

MICHAEL P. BRADFORD
NEW MEXICO
19240
2/16/22
PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: SITE CONSTRUCTION DEVELOPMENT PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

PROJ. NO. 01222034.00 | DWN. BY: MPB | ACAD FILE: F:/ENGINEERS
DSN. BY: MPB | CHK. BY: - | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 4

C:\Users\3268mpb\Desktop\WORK\North Ranch\McCloy\CELL E-1\PLANS\004-CONSTRUCTION PLAN.dwg Feb 17, 2022 - 4:2pm By: 3268mpb

EXISTING FEATURES LEGEND:

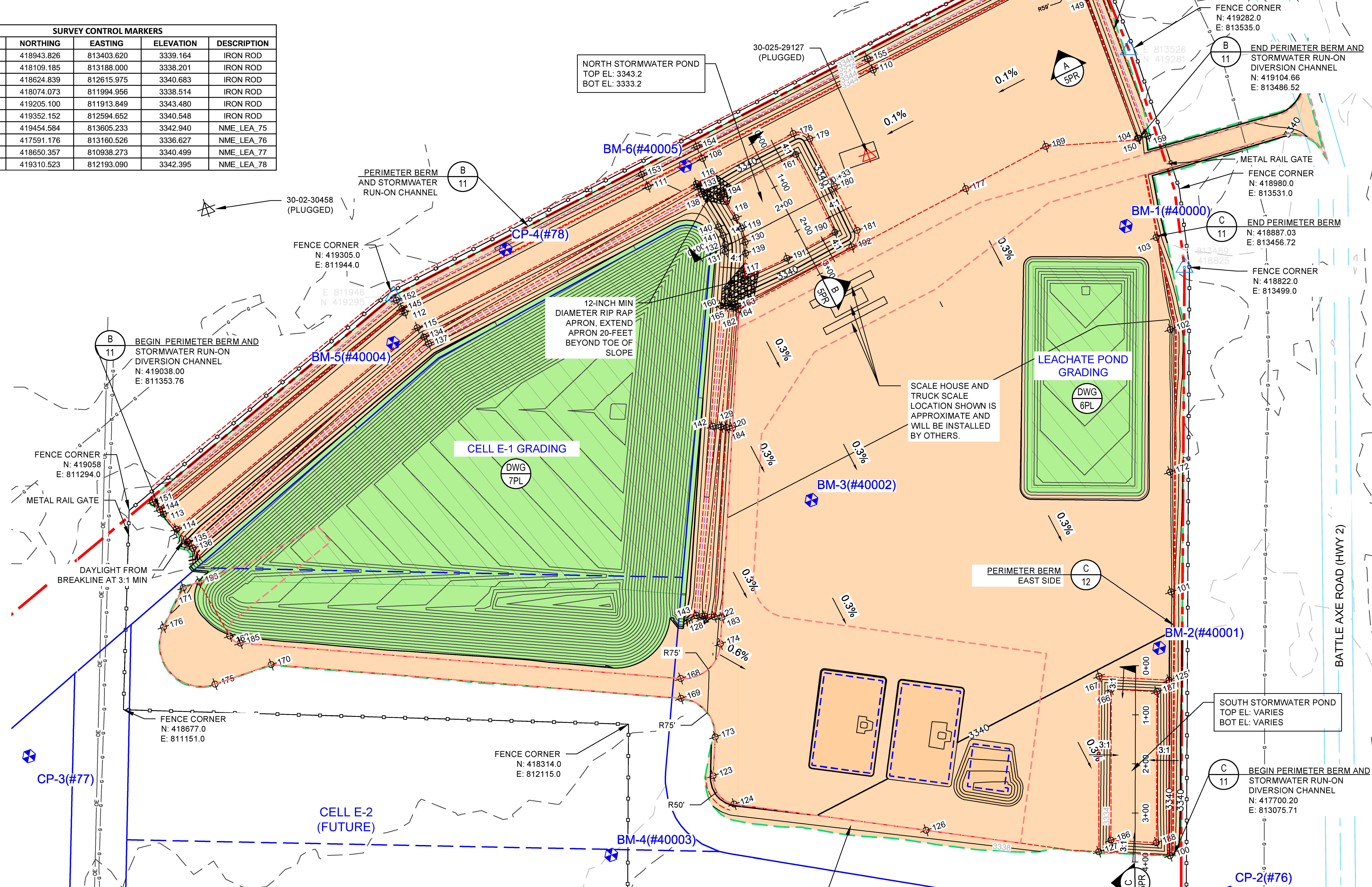
- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

PROPOSED FEATURES LEGEND:

- GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS (N: E:)
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- CP-1(#147) SURVEY CONTROL MARKER
- 163 CONSTRUCTION CONTROL POINT
- 3-STRAND BARBED WIRE FENCE (A/11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- YARD INFRASTRUCTURE GRADING AREA (SEE NOTE 4)
- MASS EXCAVATION AREA
- CALICHE/GRAVEL ROADWAY (DWG 8PL) (SEE DRAWING 8 PL FOR GRADING INFORMATION)
- GEOSYNTHETIC LINED AREA
- CONCRETE PADS (DWG 9PL) (SEE DRAWING 9 PL FOR GRADING INFORMATION)
- GRADING BREAK LINE

YARD GRADING CONSTRUCTION CONTROL POINTS				
ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	417701.71	813071.34	3341.41	SOUTH SW POND CONTROL
101	418209.23	813248.04	3341.28	YARD GRADING POINT
102	418715.06	813420.88	3342.00	YARD GRADING POINT
103	418901.79	813454.66	3342.54	YARD GRADING POINT
104	419105.16	813484.57	3344.00	YARD GRADING GRADEBREAK
105	419412.10	813476.08	3344.00	YARD GRADING POINT
106	419455.33	813455.58	3344.00	YARD GRADING POINT
107	419469.76	813419.19	3344.00	YARD GRADING POINT
108	419354.90	812632.77	3344.00	YARD GRADING POINT
109	419469.11	813407.72	3344.00	YARD GRADING POINT
110	419412.01	813020.25	3344.00	YARD GRADING POINT
111	419336.68	812509.11	3344.00	YARD GRADING POINT
112	419255.21	811956.42	3344.00	YARD GRADING POINT
113	419027.17	811358.10	3343.20	YARD GRADING POINT
114	418990.20	811372.84	3342.42	YARD GRADING POINT
115	419218.00	811970.85	3343.20	YARD GRADING POINT
116	419310.50	812604.34	3344.37	NORHT SW POND CONTROL
117	419096.70	812633.09	3333.20	NORHT SW POND CONTROL
118	419218.17	812657.83	3333.20	NORHT SW POND CONTROL
119	419193.99	812661.68	3333.20	NORHT SW POND CONTROL
120	418820.77	812500.72	3345.46	YARD GRADING POINT
122	418464.01	812351.54	3344.27	YARD GRADING POINT
123	418158.97	812243.71	3340.54	YARD GRADING POINT
124	418090.24	812265.50	3340.31	YARD GRADING POINT
125	418040.42	813185.55	3339.73	SOUTH SW POND CONTROL
126	417912.44	812617.93	3339.58	YARD GRADING POINT
127	417756.58	812936.39	3338.94	SOUTH SW POND CONTROL
128	418472.01	812333.47	3349.21	YARD GRADING POINT
129	418825.36	812490.43	3348.28	YARD GRADING POINT
130	419165.28	812659.42	3333.20	NORHT SW POND CONTROL
131	419160.43	812615.24	3343.49	NORHT SW POND CONTROL
132	419173.58	812619.46	3343.40	NORHT SW POND CONTROL
133	419303.78	812602.95	3343.90	NORHT SW POND CONTROL
134	419196.01	811977.15	3348.88	YARD GRADING POINT
135	418958.04	811385.79	3351.06	YARD GRADING POINT
136	418942.26	811392.11	3348.06	YARD GRADING POINT
137	419179.57	811981.81	3345.88	YARD GRADING POINT
138	419286.95	812607.73	3341.93	NORHT SW POND CONTROL
139	419143.71	812652.86	3333.20	NORHT SW POND CONTROL
140	419212.23	812618.48	3343.15	NORHT SW POND CONTROL
141	419192.97	812621.38	3343.28	NORHT SW POND CONTROL
142	418832.27	812474.90	3345.28	YARD GRADING POINT
143	418478.89	812317.93	3346.21	YARD GRADING POINT
144	419038.92	811353.39	3346.11	YARD GRADING POINT
145	419264.96	811953.93	3346.25	YARD GRADING POINT
146	419472.60	813407.26	3344.63	YARD GRADING POINT
147	419473.21	813419.34	3344.61	YARD GRADING POINT
148	419457.79	813457.61	3344.55	YARD GRADING POINT
149	419412.17	813478.95	3344.47	YARD GRADING POINT
150	419104.89	813486.51	3344.00	YARD GRADING POINT
151	419057.96	811345.76	3342.12	YARD GRADING POINT
152	419284.94	811948.82	3342.25	YARD GRADING POINT
153	419364.35	812504.68	3341.63	YARD GRADING POINT
154	419382.21	812629.69	3341.49	YARD GRADING POINT
155	419437.49	813016.60	3341.06	YARD GRADING POINT
156	419492.92	813404.63	3340.63	YARD GRADING POINT
157	419473.58	813470.69	3340.55	YARD GRADING POINT
158	419412.68	813499.45	3340.47	YARD GRADING POINT
159	419102.56	813505.87	3340.06	YARD GRADING POINT
160	419059.30	812570.28	3344.05	NORHT SW POND CONTROL
161	419300.91	812815.08	3333.20	NORHT SW POND CONTROL
162	418748.90	811404.72	3342.90	CELL ACCESS ROAD EDGE
163	419046.63	812598.50	3344.82	YARD GRADING GRADEBREAK
164	419050.25	812590.36	3344.49	NORTH SW POND CONTROL
165	419055.12	812579.39	3344.05	NORTH SW POND CONTROL
166	418061.48	813068.35	3331.63	SOUTH SW POND CONTROL
167	418094.25	813053.52	3339.96	SOUTH SW POND CONTROL
168	418367.62	812245.64	3342.67	CELL ACCESS ROAD EDGE
169	418329.34	812233.27	3343.47	CELL ACCESS ROAD EDGE
170	418666.02	811465.81	3343.67	CELL ACCESS ROAD EDGE
171	418872.56	811347.25	3344.67	CELL ACCESS ROAD EDGE
172	418440.61	813325.14	3341.00	YARD GRADING POINT
173	418232.27	812273.58	3340.76	CELL ACCESS ROAD EDGE
174	418408.00	812345.22	3341.29	CELL ACCESS ROAD EDGE
175	418666.02	811344.51	3343.67	CELL ACCESS ROAD EDGE
176	418809.93	811283.23	3343.67	CELL ACCESS ROAD EDGE
177	419121.78	813120.06	3343.19	YARD GRADING GRADEBREAK
178	419342.67	812824.09	3343.20	NORTH SW POND CONTROL
179	419321.58	812852.46	3343.20	NORTH SW POND CONTROL
180	419213.86	812868.34	3343.20	NORTH SW POND CONTROL
181	419113.90	812883.05	3343.84	NORTH SW POND CONTROL
182	419040.47	812601.14	3343.18	NORTH SW POND CONTROL
183	418457.77	812365.51	3341.44	YARD GRADING POINT
184	418815.99	812511.52	3342.51	YARD GRADING POINT
185	418728.10	811420.54	3343.01	CELL ACCESS ROAD EDGE
186	417770.63	812967.46	3330.70	SOUTH SW POND CONTROL
187	418026.36	813154.48	3331.51	SOUTH SW POND CONTROL
188	417735.51	813053.60	3330.62	SOUTH SW POND CONTROL
189	419150.32	813302.22	3343.20	YARD GRADING GRADEBREAK
190	419124.90	812838.85	3333.20	NORTH SW POND CONTROL
191	419106.43	812729.26	3333.20	YARD GRADING POINT
192	419085.53	812861.96	3343.87	NORTH SW POND CONTROL
193	418873.35	811380.95	3343.56	CELL ACCESS ROAD EDGE
194	419273.16	812645.98	3333.20	NORTH SW POND CONTROL

SURVEY CONTROL MARKERS				
ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM-1(#40000)	418943.826	813403.620	3339.164	IRON ROD
BM-2(#40001)	418109.185	813188.000	3338.201	IRON ROD
BM-3(#40002)	418624.839	812615.975	3340.683	IRON ROD
BM-4(#40003)	418074.073	811994.956	3338.514	IRON ROD
BM-5(#40004)	419205.100	811913.849	3343.480	IRON ROD
BM-6(#40005)	419352.152	812594.652	3340.548	IRON ROD
CP-1(#75)	419454.584	813605.233	3342.940	NME_LEA_75
CP-2(#76)	417591.176	813160.526	3336.627	NME_LEA_76
CP-3(#77)	418650.357	810938.273	3340.499	NME_LEA_77
CP-4(#78)	419310.523	812193.090	3342.395	NME_LEA_78



NOTES:

1. PROPOSED GRADES/CONTOURS SHOWN REPRESENT THE FINISHED GRADE ELEVATION PRIOR TO PLACEMENT OF ROAD BASE MATERIAL, SEE SHEET 8 PL FOR ROAD TOP GRADING.
2. EXISTING PLUGGED OIL WELL WITHIN THE WORK AREA SHALL BE CUT BELOW GRADE AND CAPPED IN ACCORDANCE WITH APPLICABLE NEW MEXICO REGULATIONS. CONTRACTOR SHALL COORDINATE THIS WORK WITH OWNER.
3. CONTRACTOR SHALL COORDINATE WITH OWNER TO OBTAIN PERMITS NECESSARY TO CONSTRUCT WITHIN THE NEW MEXICO HIGHWAY 2 RIGHT-OF-WAY.
4. YARD GRADING BACKFILL NEEDED TO ACHIEVE DESIGN GRADES SHOWN IS CLASSIFIED AS GENERAL FILL AND SHALL BE COMPACTED TO 90% STANDARD PROCTOR (ASTM D-698) AND PLACED IN MAXIMUM 12-INCH LIFTS.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD, NEW MEXICO 19240, PROFESSIONAL ENGINEER, 2/16/22

SHEET TITLE: YARD INFRASTRUCTURE GRADING PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS, NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY, LEA COUNTY, NEW MEXICO

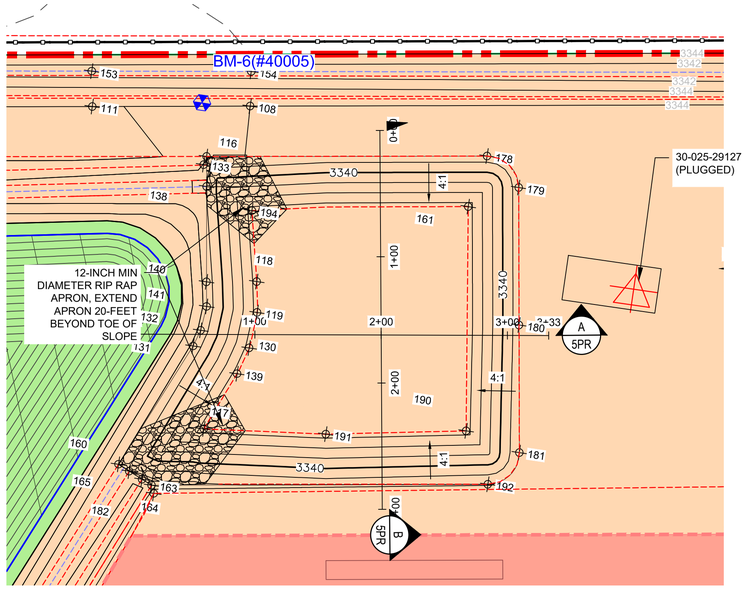
CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

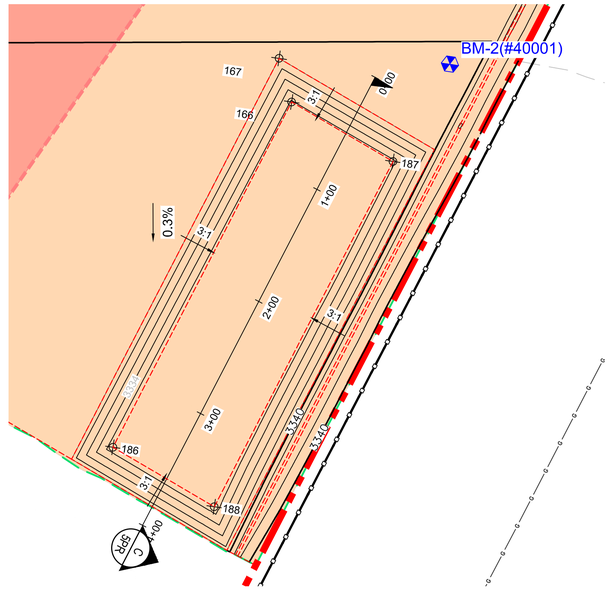
PROJ. NO. 01222034.00 | DWN. BY: MPB | ACAD FILE: F:/ENGINEERS
DSN. BY: MPB | CHK. BY: - | APP. BY: MPB

DATE: 02-16-2022
SCALE: AS SHOWN
SHEET: 5PL

C:\Users\3268mpb\Desktop\WORK\North Ranch\McCloy\CELL E-1\PLANS\005-INFRASTRUCTURE GRADING PLAN.dwg Feb 17, 2022 - 4:2pm By: 3268mpb



NORTH STORMWATER POND



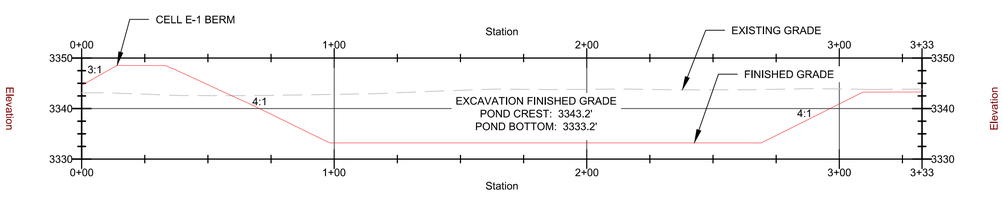
SOUTH STORMWATER POND

PROPOSED FEATURES LEGEND:

- 3300 GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- FACILITY PERMIT BOUNDARY
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- 3-STRAND BARBED WIRE FENCE (A / 11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- YARD INFRASTRUCTURE GRADING AREA (SEE NOTE 4)
- CALICHE/GRAVEL ROADWAY (SEE DRAWING 8 PL FOR GRADING INFORMATION)
- GRADING BREAK LINE

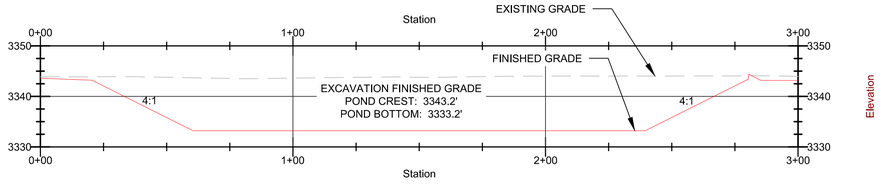
NOTES:

1. PROPOSED GRADES/CONTOURS SHOWN REPRESENT THE FINISHED GRADE ELEVATION PRIOR TO PLACEMENT OF ROAD BASE MATERIAL, SEE SHEET 8 PL FOR ROAD TOP GRADING.
2. YARD GRADING BACKFILL NEEDED TO ACHIEVE DESIGN GRADES SHOWN IS CLASSIFIED AS GENERAL FILL AND SHALL BE COMPACTED TO 90% STANDARD PROCTOR (ASTM D-698) AND PLACED IN MAXIMUM 12-INCH LIFTS.



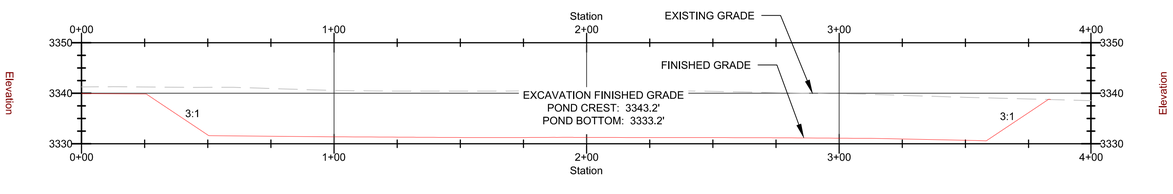
NORTH STORMWATER POND PROFILE

DETAIL A / 5PR
HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE (2X): 1"=15'



NORTH STORMWATER POND PROFILE

DETAIL B / 5PR
HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE (2X): 1"=15'



SOUTH STORMWATER POND PROFILE

DETAIL C / 5PR
HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE (2X): 1"=15'

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER
2/16/22

NO.	REVISION	DATE

SHEET TITLE: YARD INFRASTRUCTURE GRADING PLAN - STORMWATER POND PROFILE

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
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(602) 840-2596

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 5PR

EXISTING FEATURES LEGEND:

- 3300 EXISTING GRADE CONTOURS (2' CONTOURS)
- OE EXISTING OVERHEAD ELECTRIC
- G EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

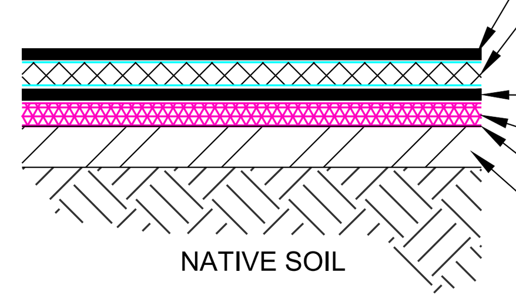
PROPOSED FEATURES LEGEND:

- 3300 GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- N: E: PERMIT BOUNDARY CORNERS
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- YARD INFRASTRUCTURE GRADING AREA (DWG 5PL)
- MASS EXCAVATION AREA
- POND LINER SYSTEM AREA (A 6PL)
- GRADING BREAK LINE
- LINER SYSTEM ANCHOR TRENCH (B 6PL)

30 0 15 30

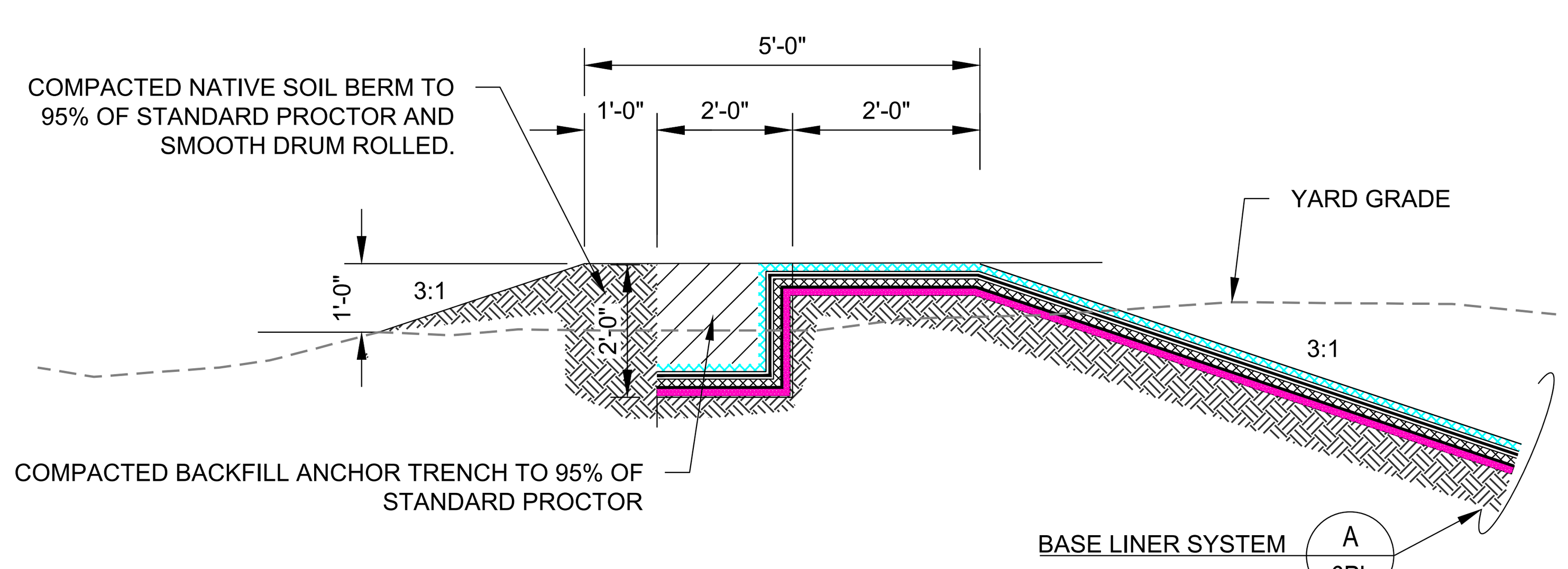
POINTS TABLE

ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
500	418927.7	813198.6	3347.5	POND CREST
501	418856.3	813401.0	3347.5	POND CREST
502	418431.3	813251.2	3347.5	POND CREST
503	418502.6	813048.8	3347.5	POND CREST
504	418715.2	813123.7	3347.5	POND CREST
505	418643.8	813326.1	3347.5	POND CREST
506	418467.0	813150.0	3347.5	POND CREST
507	418892.0	813299.8	3347.5	POND CREST
508	418882.3	813220.3	3335.7	POND TOE
509	418858.6	813277.2	3334.5	POND SUMP CREST
510	418851.9	813296.3	3334.5	POND SUMP CREST
511	418834.6	813355.7	3335.7	POND TOE
512	418651.3	813304.0	3339.7	POND TOE
513	418443.6	813245.3	3344.3	POND TOE
514	418482.0	813155.3	3342.2	POND TOE
515	418508.5	813061.1	3344.3	POND TOE
516	418707.6	813145.9	3339.7	POND TOE
517	418491.3	813158.6	3342.0	POND FLOOR FL
518	418585.8	813191.9	3340.0	POND FLOOR FL
519	418680.1	813225.2	3338.0	POND FLOOR FL
520	418774.4	813258.4	3336.0	POND FLOOR FL
521	418839.1	813270.6	3334.9	POND SUMP CREST
522	418832.5	813289.5	3334.9	POND SUMP CREST
523	418840.1	813285.8	3332.8	POND SUMP BOT
524	418847.7	813288.5	3332.5	POND SUMP BOT
525	418850.3	813280.9	3332.6	POND SUMP BOT
526	418842.8	813278.3	3332.8	POND SUMP BOT



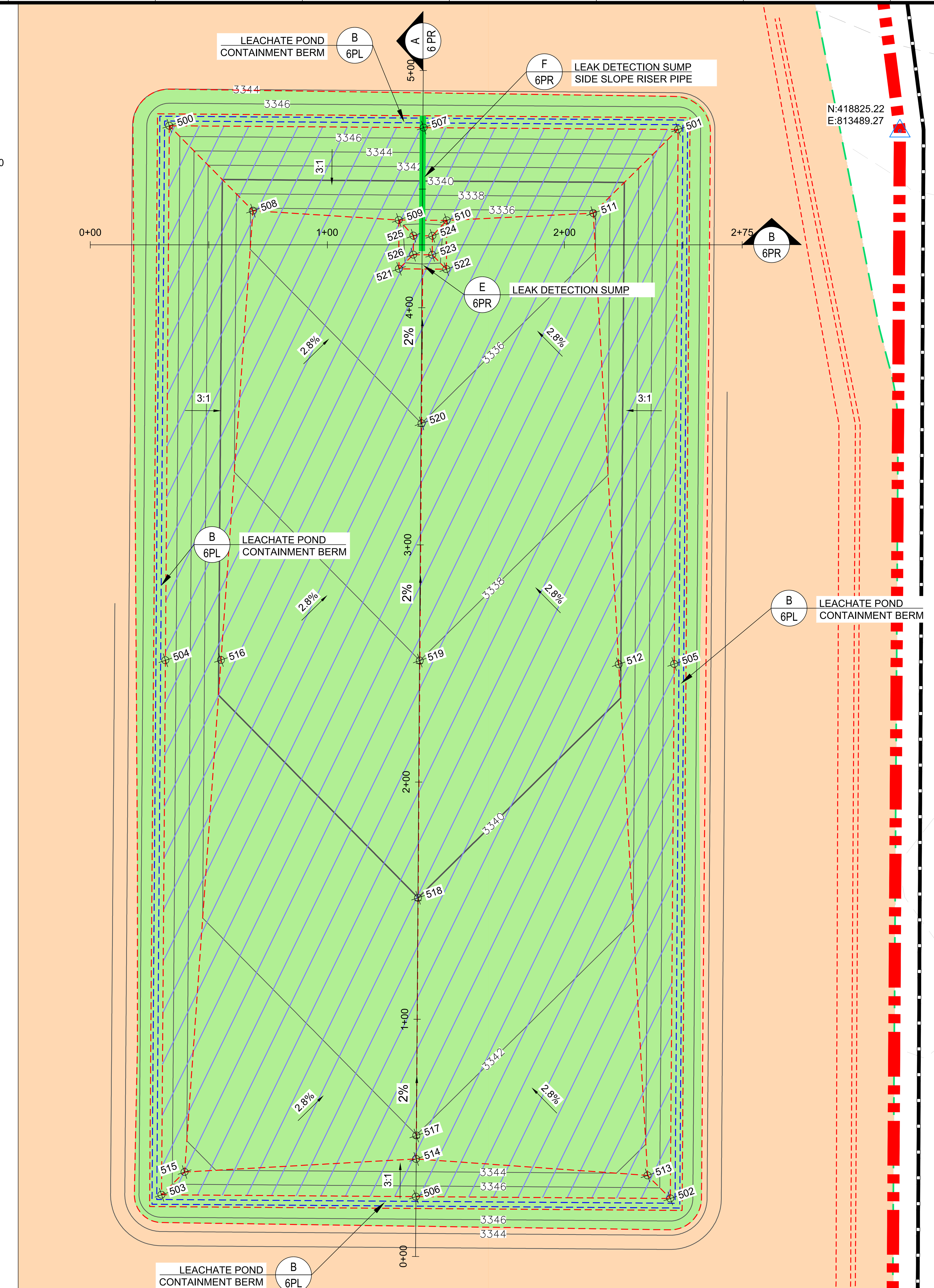
EVAPORATION POND BASE LINER SYSTEM

DETAIL A 6PL
N.T.S.



EVAPORATION POND CONTAINMENT BERM AND ANCHOR TRENCH

DETAIL B 6PL
N.T.S.



NOTES:

1. PLACE TOE LINE LINER BALLAST TUBES ALONG ENTIRE POND TOE LINE. (C 6PR)
2. PLACE LEACHATE POND GAS VENTS ALONG CREST LINE OF ENTIRE POND (D 6PR)
3. SEE DRAWING 6 CT FOR LINER CERTIFICATION GRID POINTS (DWG 6CT)

nm811 Know what's below. Call before you dig.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER 2/16/22

DATE | REVISION | NO.

SHEET TITLE: LEACHATE POND GRADING PLAN AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8100 MAPLE AVENUE SUITE 118
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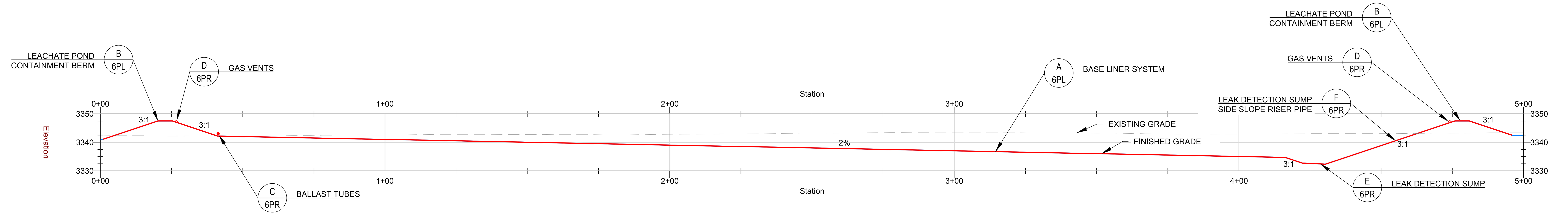
(602) 840-2596

PROJ. NO. 01222034.00 | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | DSN. BY: MPB | ACAD FILE: F-ENGINEERS

DATE: 02-16-2022

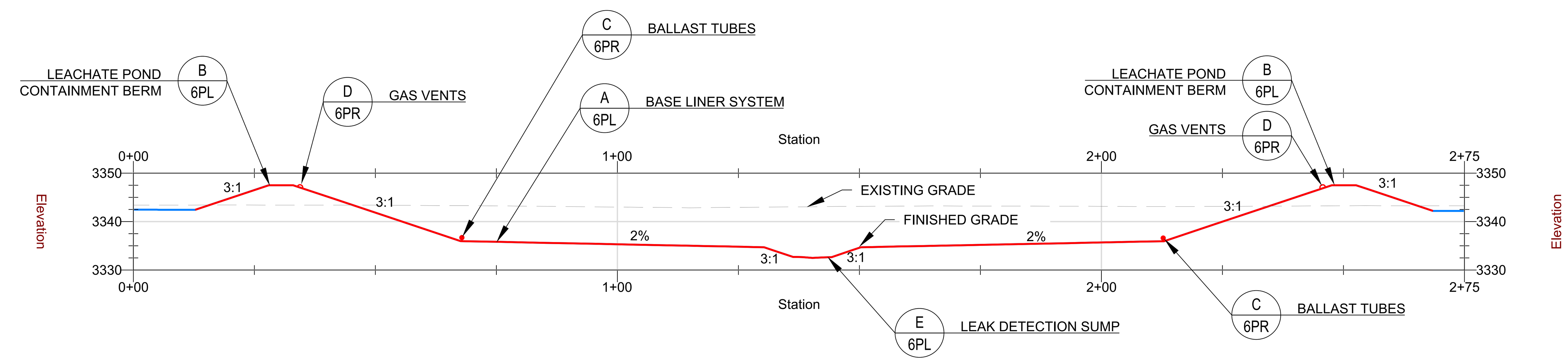
SCALE: AS SHOWN

SHEET: 6PL



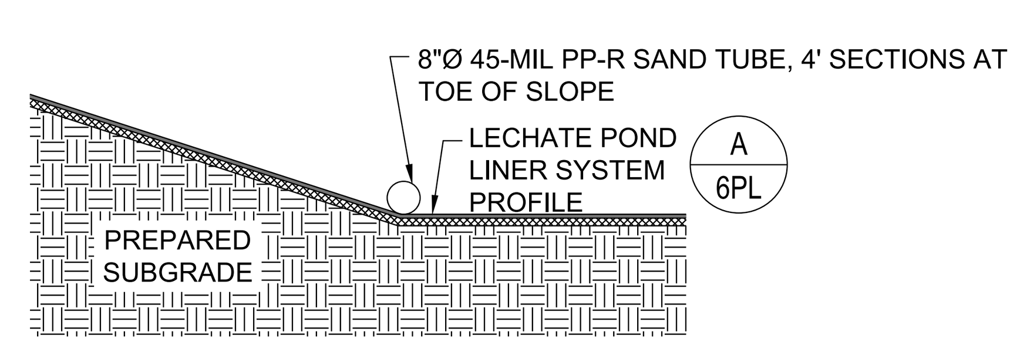
EVAPORATION POND PROFILE

DETAIL A 6PR
SCALE: 1" = 20'



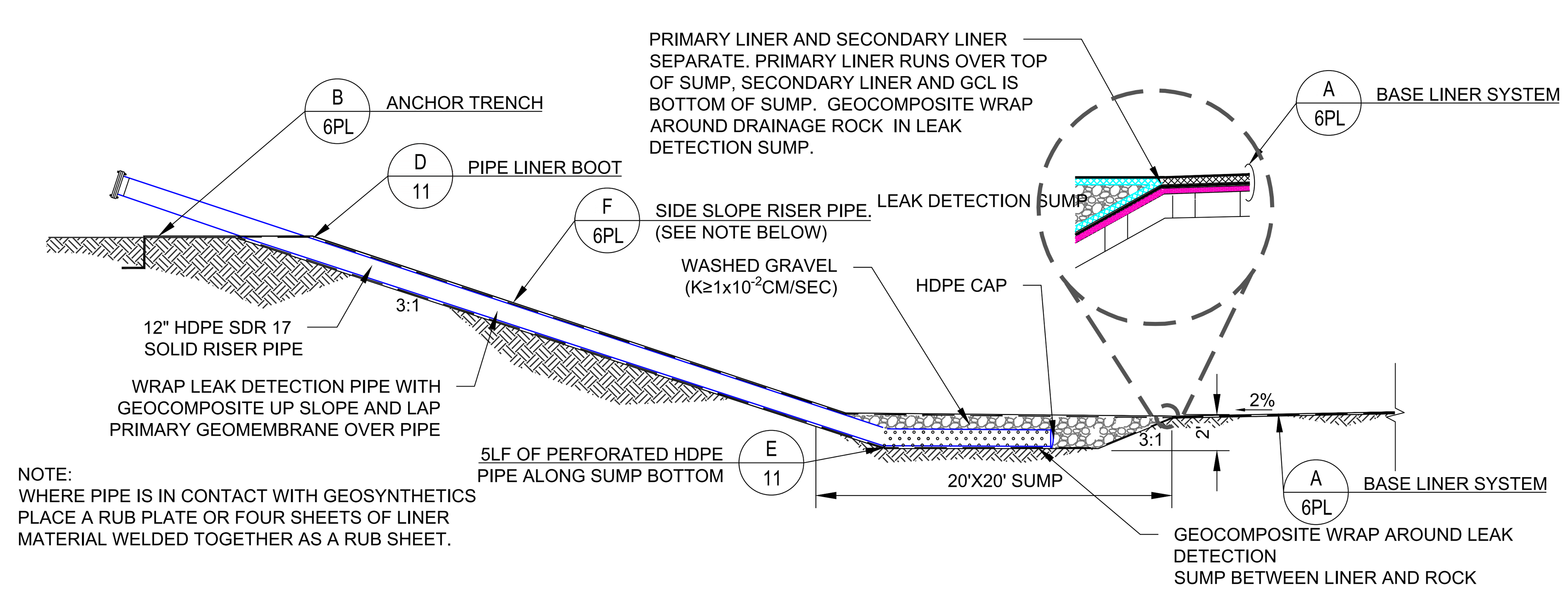
EVAPORATION POND PROFILE

DETAIL B 6PR
SCALE: 1" = 20'



EVAPORATION POND TOE LINE LINER BALLASTS

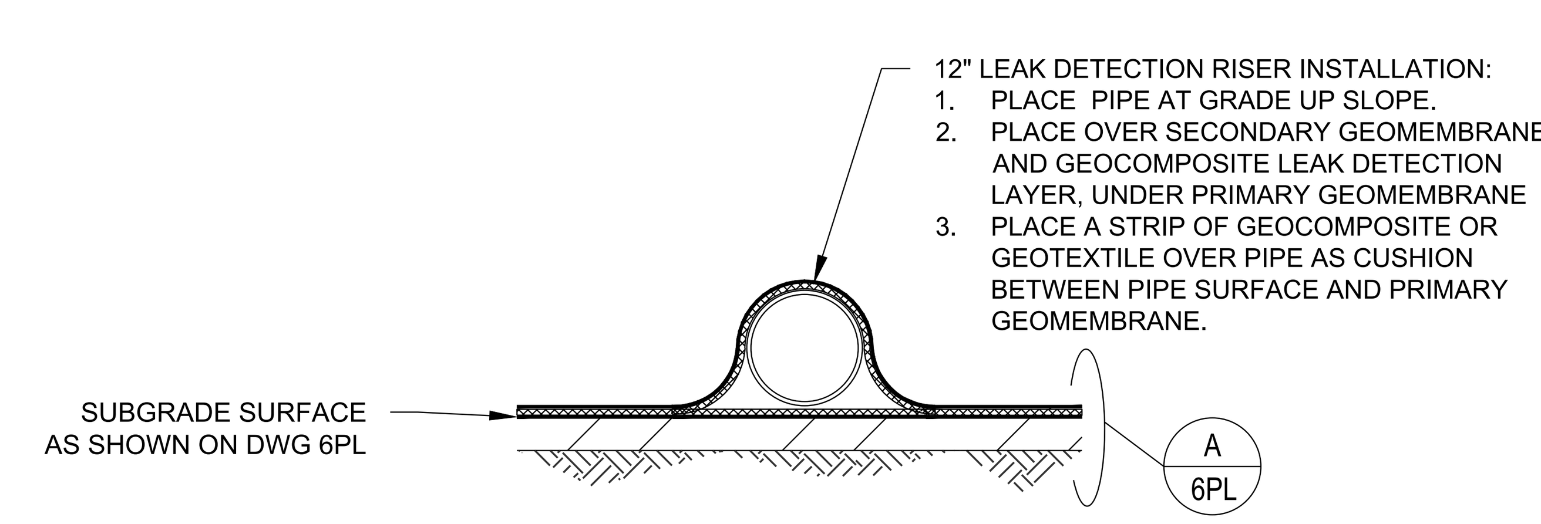
DETAIL C 6PR
N.T.S.



NOTE:
WHERE PIPE IS IN CONTACT WITH GEOSYNTHETICS PLACE A RUB PLATE OR FOUR SHEETS OF LINER MATERIAL WELDED TOGETHER AS A RUB SHEET.

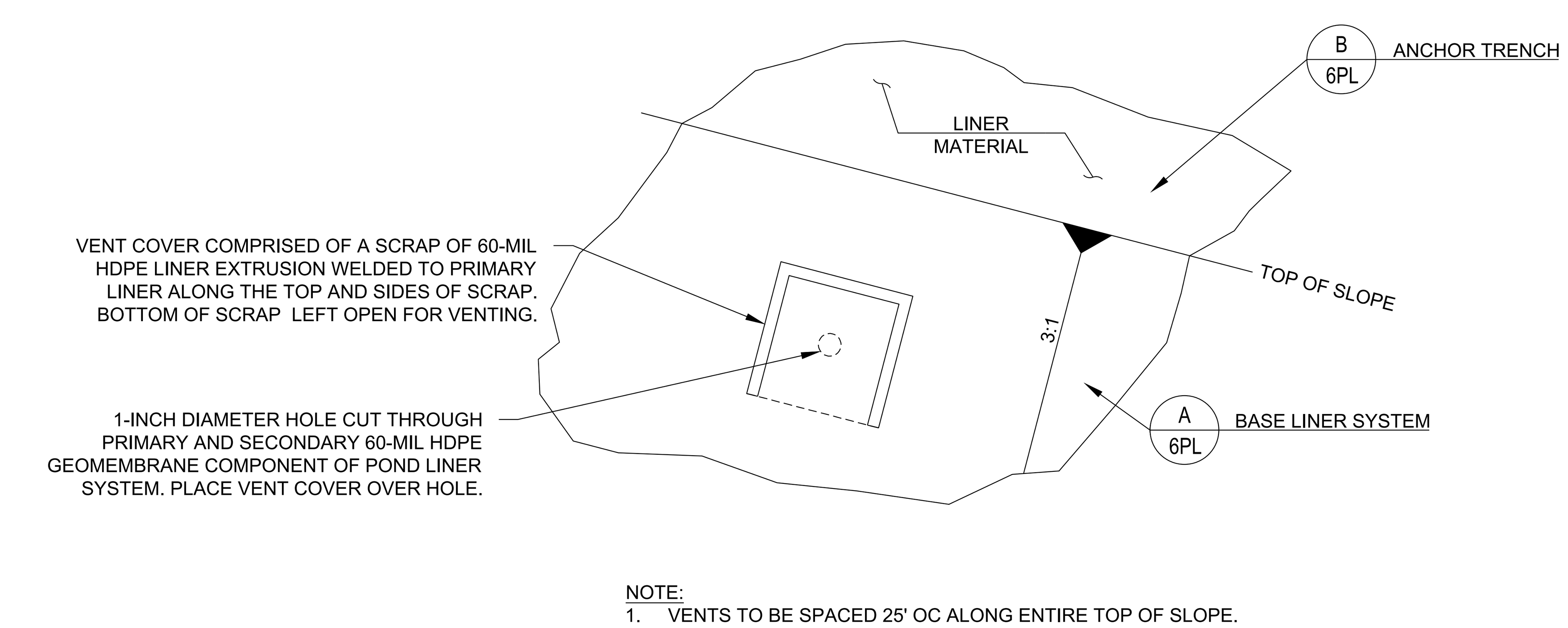
EVAPORATION POND LEAK DETECTION SUMP

DETAIL E 6PR
N.T.S.



EVAPORATION POND LEAK DETECTION SUMP RISER PIPE TRENCH

DETAIL F 6PR
N.T.S.



NOTE:
1. VENTS TO BE SPACED 25' OC ALONG ENTIRE TOP OF SLOPE.

EVAPORATION POND LINER VENTS

DETAIL D 6PR
N.T.S.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: LEACHATE POND GRADING PROFILES AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
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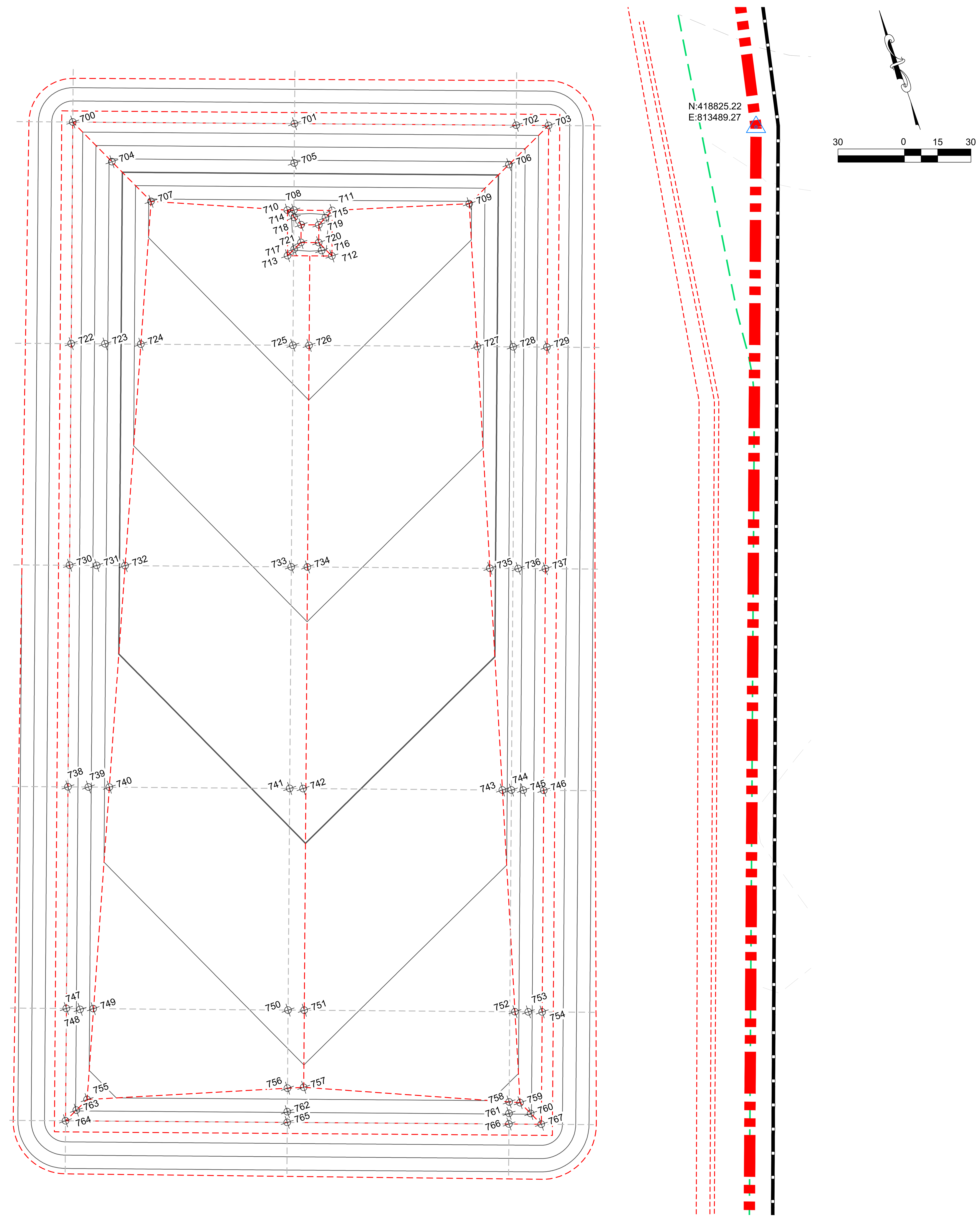
DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 6PR

nm811 Know what's below. Call before you dig.

EVAPORATION POND CERTIFICATION POINTS TABLE				
ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
700	418927.6837	813198.6405	3347.5	CERT POINT
701	418894.4407	813292.9532	3347.5	CERT POINT
702	418861.1978	813387.266	3347.5	CERT POINT
703	418856.3409	813401.0453	3347.5	CERT POINT
704	418905.0154	813209.4933	3341.5762	CERT POINT
705	418877.6802	813287.0455	3341.5762	CERT POINT
706	418845.488	813378.377	3341.5762	CERT POINT
707	418882.3471	813220.3462	3335.6525	CERT POINT
708	418857.6325	813279.9792	3334.4907	CERT POINT
709	418834.6351	813355.7087	3335.6525	CERT POINT
710	418858.603	813277.2311	3334.4913	CERT POINT
711	418851.8684	813296.301	3334.4872	CERT POINT
712	418832.4733	813289.4598	3334.8985	CERT POINT
713	418839.1219	813270.5972	3334.8985	CERT POINT
714	418854.467	813279.0706	3333.6347	CERT POINT
715	418849.77	813292.378	3333.5788	CERT POINT
716	418836.3029	813285.8604	3334	CERT POINT
717	418840.9539	813274.4239	3333.8385	CERT POINT
718	418850.3311	813280.91	3332.6185	CERT POINT
719	418847.6716	813288.455	3332.4985	CERT POINT
720	418840.1266	813285.7956	3332.7785	CERT POINT
721	418842.786	813278.2506	3332.7785	CERT POINT
722	418833.3709	813165.3975	3347.5	CERT POINT
723	418828.2896	813179.8137	3342.4048	CERT POINT
724	418822.9232	813195.0383	3337.0239	CERT POINT
725	418800.128	813259.7103	3335.6525	CERT POINT
726	418797.6995	813266.5999	3335.5064	CERT POINT
727	418772.4758	813338.1614	3337.0239	CERT POINT
728	418767.1095	813353.3861	3342.4048	CERT POINT
729	418762.0281	813367.8023	3347.5	CERT POINT
730	418739.0581	813132.1545	3347.5	CERT POINT
731	418734.9817	813143.7196	3343.4125	CERT POINT
732	418730.7323	813155.7754	3339.1516	CERT POINT
733	418705.8152	813226.4673	3337.6525	CERT POINT
734	418703.3867	813233.3569	3337.5064	CERT POINT
735	418676.0411	813310.9384	3339.1516	CERT POINT
736	418671.7917	813322.9942	3343.4125	CERT POINT
737	418667.7153	813334.5593	3347.5	CERT POINT
738	418644.7453	813098.9115	3347.5	CERT POINT
739	418641.6738	813107.6256	3344.4201	CERT POINT
740	418638.5414	813116.5124	3341.2792	CERT POINT
741	418611.5024	813193.2243	3339.6525	CERT POINT
742	418609.4855	813198.9463	3339.5311	CERT POINT
743	418579.6064	813283.7154	3341.2792	CERT POINT
744	418578.2594	813287.5371	3342.6299	CERT POINT
745	418576.474	813292.6022	3344.4201	CERT POINT
746	418573.4025	813301.3163	3347.5	CERT POINT
747	418550.4326	813065.6685	3347.5	CERT POINT
748	418548.0016	813071.3905	3345.4317	CERT POINT
749	418546.3988	813077.1126	3343.4553	CERT POINT
750	418517.1896	813159.9813	3341.6525	CERT POINT
751	418514.7611	813166.8709	3341.5064	CERT POINT
752	418483.1717	813256.4923	3343.4069	CERT POINT
753	418481.1563	813262.2103	3345.4278	CERT POINT
754	418479.0897	813268.0733	3347.5	CERT POINT
755	418508.5335	813061.1437	3344.2797	CERT POINT
756	418483.9405	813148.2618	3342.3576	CERT POINT
757	418481.9519	813155.3064	3342.2021	CERT POINT
758	418445.5571	813240.7627	3344.1744	CERT POINT
759	418443.6139	813245.3254	3344.2797	CERT POINT
760	418437.4523	813248.2754	3345.8898	CERT POINT
761	418440.7034	813239.0519	3345.8898	CERT POINT
762	418473.9464	813144.7391	3345.8898	CERT POINT
763	418505.5836	813054.9821	3345.8898	CERT POINT
764	418502.6336	813048.8205	3347.5	CERT POINT
765	418469.3906	813143.1333	3347.5	CERT POINT
766	418436.1476	813237.4461	3347.5	CERT POINT
767	418431.2907	813251.2253	3347.5	CERT POINT



PROPOSED FEATURES LEGEND:

GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)

GRADING BREAK LINE

CERTIFICATION GRID

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER, 3/15/22

NO.	REVISION	DATE
1	REVISED CERTIFICATION GRID	3/15/22

SHEET TITLE: LEACHATE POND LINER CERTIFICATION GRID

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:/ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 6CT

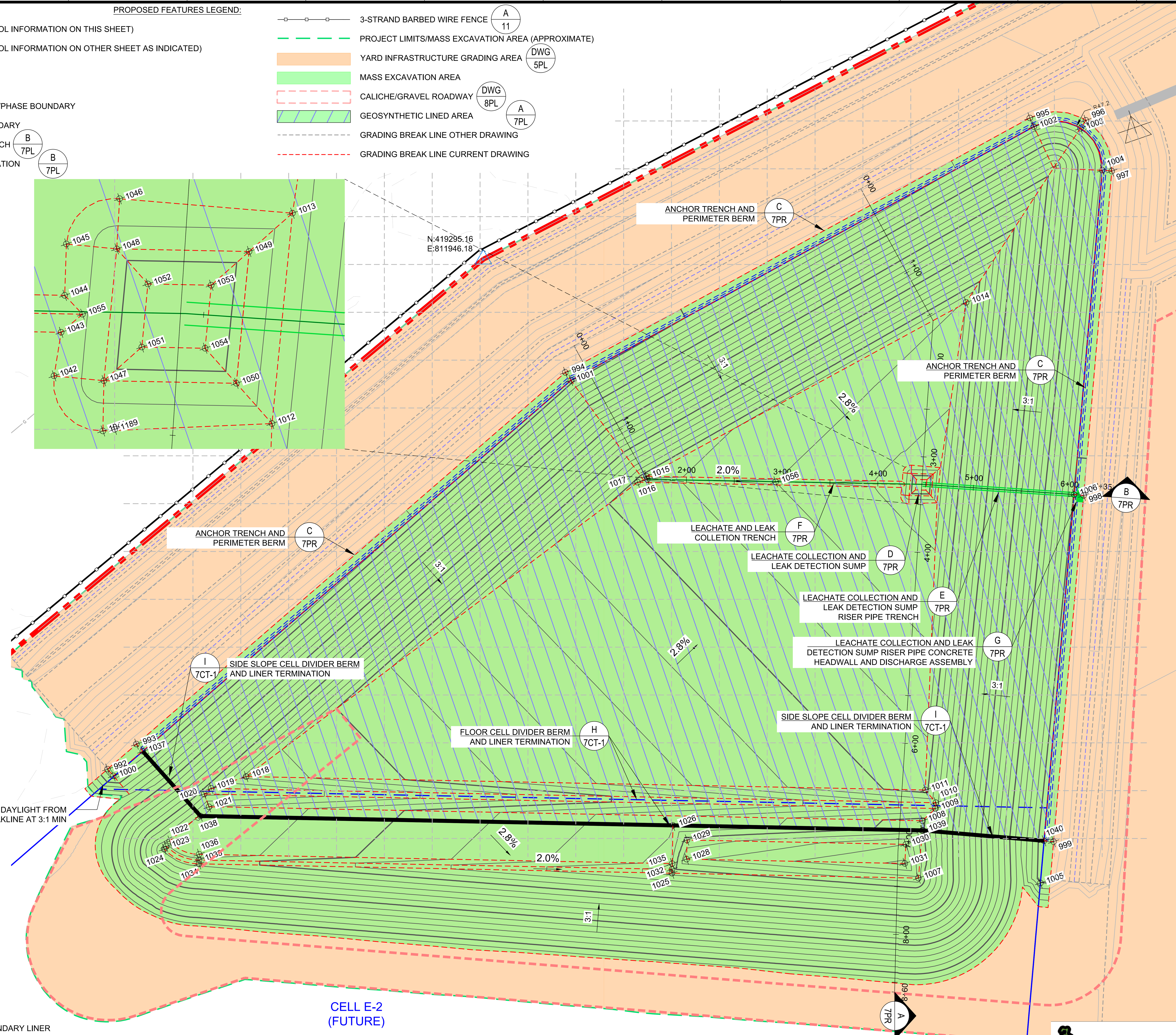
EXISTING FEATURES LEGEND:

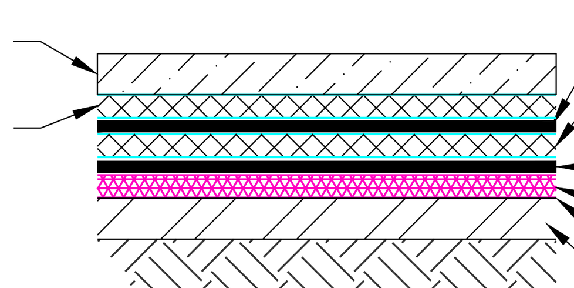
- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

PROPOSED FEATURES LEGEND:

- GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS (N: E:)
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- LINER SYSTEM ANCHOR TRENCH (B / 7PL)
- FUTURE TIE-IN/LINER TERMINATION (B / 7PL)
- 3-STRAND BARBED WIRE FENCE (A / 11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- YARD INFRASTRUCTURE GRADING AREA (DWG 5PL)
- MASS EXCAVATION AREA
- CALICHE/GRAVEL ROADWAY (DWG 8PL)
- GEOSYNTHETIC LINED AREA (A / 7PL)
- GRADING BREAK LINE OTHER DRAWING
- GRADING BREAK LINE CURRENT DRAWING

CELL E-1 GRADING CONTROL POINTS				
ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
992	418919.06	811401.41	3353.1	OUTER BERM CREST
993	418933.93	811438.54	3353.9	OUTER BERM CREST
994	419155.38	811988.67	3350.9	OUTER BERM CREST
995	419248.89	812534.06	3347.4	OUTER BERM CREST
996	419227.46	812588.64	3348	OUTER BERM CREST
997	419168.55	812596.96	3348.5	OUTER BERM CREST
998	418857.55	812458.77	3350.2	OUTER BERM CREST
999	418525.59	812311.28	3352	OUTER BERM CREST
1000	418910.43	811404.86	3353.1	CELL E1 SUBGRADE CREST
1001	419145.7	811991.41	3350.9	CELL E1 SUBGRADE CREST
1002	419238.99	812535.14	3347.4	CELL E1 SUBGRADE CREST
1003	419221.46	812580.63	3347.9	CELL E1 SUBGRADE CREST
1004	419172.61	812587.82	3348.5	CELL E1 SUBGRADE CREST
1005	418489.22	812284.22	3350	CELL E1 SUBGRADE CREST
1006	418861.61	812449.64	3350.2	CELL E1 LEACHATE RISER
1007	418535.53	812165.4	3306.5	CELL E1 SUBGRADE TOE
1008	418590.84	812188.85	3309.2	CELL E1 SUBGRADE TOE
1009	418598.56	812205.83	3313.2	CELL E1 SUBGRADE TOE
1010	418604.04	812208.33	3313.2	CELL E1 SUBGRADE TOE
1011	418620.21	812202.27	3309.1	CELL E1 SUBGRADE TOE
1012	418900.24	812311.49	3303	CELL E1 SUBGRADE TOE
1013	418933.74	812326.79	3302.9	CELL E1 SUBGRADE TOE
1014	419088.32	812408.41	3306	CELL E1 SUBGRADE TOE
1015	419025.21	812033.43	3308.8	CELL E1 SUBGRADE TOE
1016	419021.86	812033.21	3307.7	LEACHATE TRENCH FL
1017	419022.3	812022.63	3308.9	CELL E1 SUBGRADE TOE
1018	418864.57	811535.8	3323.3	CELL E1 SUBGRADE TOE
1019	418864.77	811497.19	3328.4	CELL E1 SUBGRADE TOE
1020	418861.58	811488.48	3328.5	CELL E1 SUBGRADE TOE
1021	418847.29	811488.78	3324.1	CELL E1 SUBGRADE TOE
1022	418826.87	811438.34	3323.3	CELL E1 SUBGRADE TOE
1023	418822.75	811432.86	3322	CELL E1 SUBGRADE TOE
1024	418820.7	811430.12	3321.3	CELL E1 SUBGRADE TOE
1025	418624.2	811923.57	3311.4	SW POND TOP
1026	418671.14	811940.78	3314.2	SW POND TOP
1027	418581.11	812185.2	3309.4	SW POND TOP
1028	418633.12	811942.82	3306.4	SW POND TOE
1029	418651.9	811949.7	3309.2	SW POND TOE
1030	418573.16	812164.44	3304	SW POND TOE
1031	418554.61	812156.94	3301.5	SW POND TOE
1032	418627.95	811924.95	3311.6	SW CHANNEL TOE
1033	418798.1	811460.89	3321.3	SW CHANNEL TOE
1034	418794.35	811459.51	3321.3	SW CHANNEL TOE
1035	418633.59	811927.02	3311.9	SW CHANNEL TOP
1036	418803.73	811462.95	3323.3	SW CHANNEL TOP
1037	418924.65	811442.26	3353.9	LINER TERMINATION EDGE
1038	418841.12	811477.2	3324.1	LINER TERMINATION EDGE
1039	418581.15	812186.04	3309.7	LINER TERMINATION EDGE
1040	418529.66	812302.1	3352	LINER TERMINATION EDGE
1041	418908.61	812283.23	3303.6	LEACHATE SUMP TOP
1042	418920.46	812278.32	3303.6	LEACHATE SUMP TOP
1043	418927.22	812281.95	3303.4	LEACHATE SUMP TOP
1044	418933.11	812284.63	3303.4	LEACHATE SUMP TOP
1045	418941.47	812287.83	3303.6	LEACHATE SUMP TOP
1046	418945.91	812299.14	3303.6	LEACHATE SUMP TOP
1047	418916.84	812286.24	3300.7	LEACHATE SUMP TOE
1048	418937.82	812295.83	3300.7	LEACHATE SUMP TOE
1049	418929.88	812317.49	3300.7	LEACHATE SUMP TOE
1050	418908.89	812307.9	3300.7	LEACHATE SUMP TOE
1051	418920.24	812294.4	3298.7	LEAK DET SUMP BOT
1052	418930.27	812298.98	3298.7	LEAK DET SUMP BOT
1053	418926.47	812309.34	3298.7	LEAK DET SUMP BOT
1054	418916.44	812304.75	3298.7	LEAK DET SUMP BOT
1055	418928.99	812286.49	3302.3	LEACHATE TRENCH FL
1056	418975.68	812159.15	3305	LEACHATE TRENCH FL





DISPOSAL CELL E-1 BASE LINER SYSTEM

DETAIL A / 7PL
N.T.S.

NOTES:

1. PROPOSED GRADES/CONTOURS SHOWN REPRESENT THE FINISHED GRADE ELEVATION PRIOR TO PLACEMENT OF PROTECTIVE COVER MATERIAL, SEE DRAWING 7 CT FOR CERTIFICATION ELEVATIONS OF PROTECTIVE COVER LAYER
2. EXISTING PLUGGED OIL WELL WITHIN THE WORK AREA SHALL BE CUT BELOW GRADE AND CAPPED IN ACCORDANCE WITH APPLICABLE NEW MEXICO REGULATIONS. CONTRACTOR SHALL COORDINATE THIS WORK WITH OWNER.
3. SEE DRAWING 7 CT FOR LINER CERTIFICATION GRID POINTS (DWG 7CT)

30 0 15 30

nm811 Know what's below. Call before you dig.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER

DATE | REVISION | NO.

SHEET TITLE: DISPOSAL CELL E-1 GRADING PLAN AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS, NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY, LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

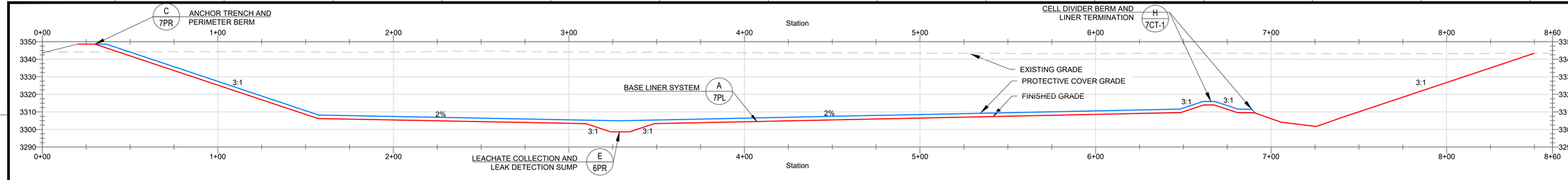
PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: F/ENGINEERS

DATE: 02-16-2022

SCALE: AS SHOWN

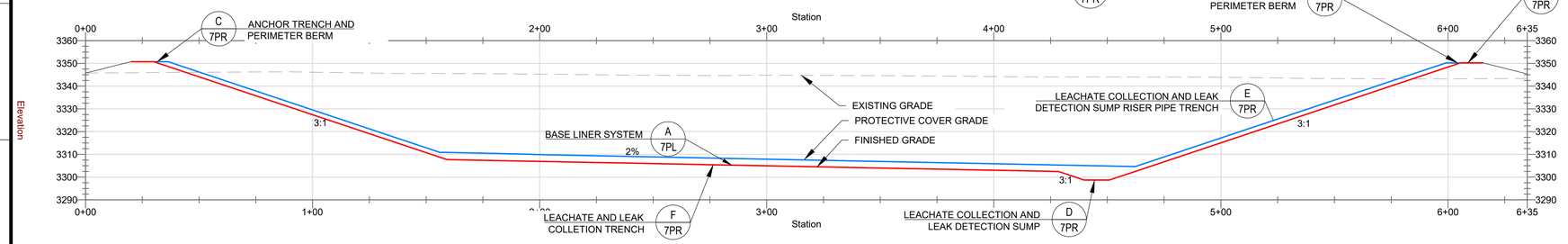
SHEET: 7PL

C:\Users\3268mpb\OneDrive - SCS Engineers\Desktop\WORK\North Ranch McCloy\CELL E-1\PLANS\007-CELL E1 GRADING PLAN.dwg Feb 22, 2022 - 1:21pm By: 3268mpb



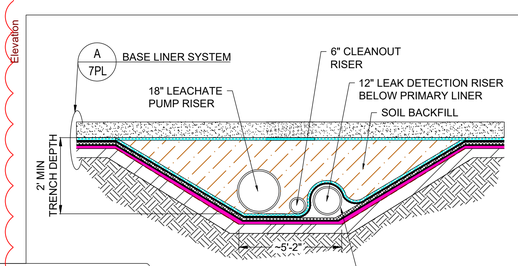
EVAPORATION POND PROFILE

DETAIL A 7PR
SCALE: 1" = 30'



EVAPORATION POND PROFILE

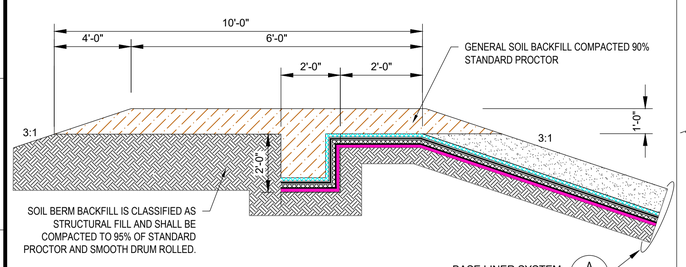
DETAIL B 7PR
SCALE: 1" = 30'



NOTE:
MAINTAIN MINIMUM 4-INCHES BETWEEN PIPES

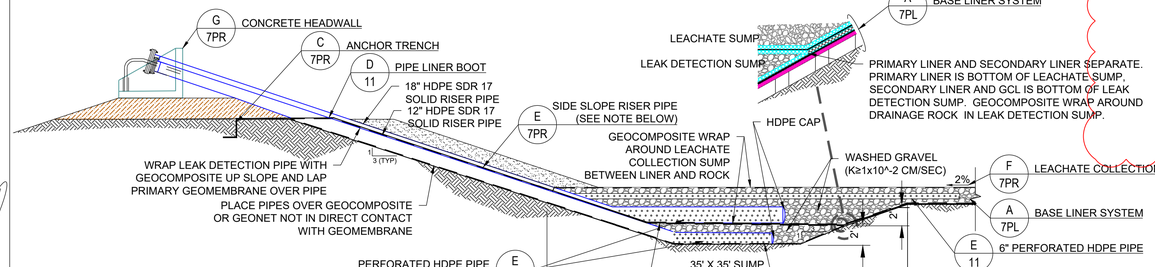
CELL E1 SUMP RISER PIPE TRENCH

DETAIL E 7PR
N.T.S.



CELL E1 CONTAINMENT BERM AND ANCHOR TRENCH

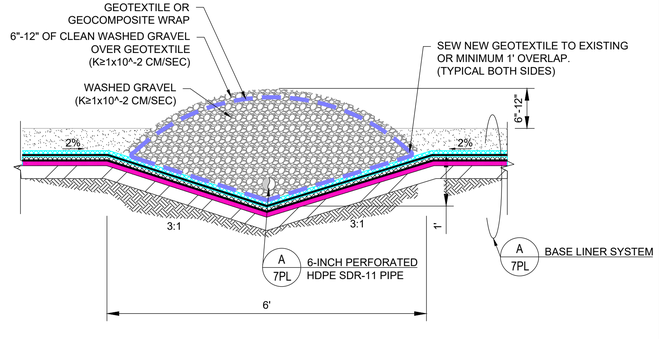
DETAIL C 7PR
N.T.S.



NOTE:
WHERE PIPE IS IN CONTACT WITH GEOSYNTHETICS PLACE A RUB PLATE OR FOUR SHEETS OF LINER MATERIAL WELDED TOGETHER AS A RUB SHEET.

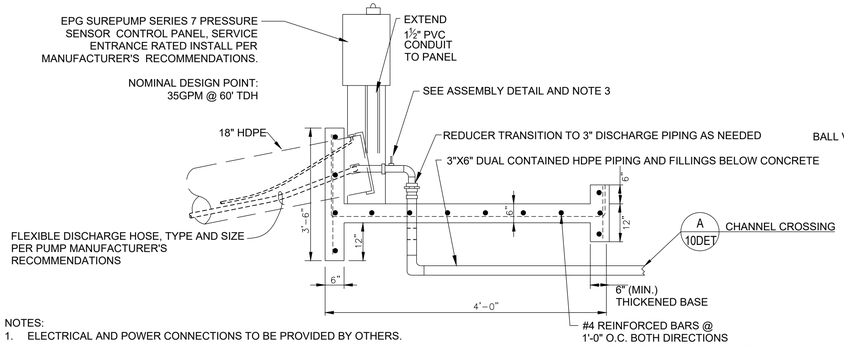
CELL E1 LEACHATE COLLECTION AND LEAK DETECTION SUMP

DETAIL D 7PR
N.T.S.



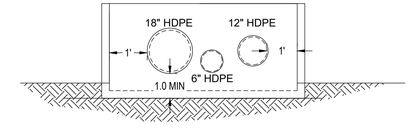
LEACHATE COLLECTION PIPE AND TRENCH

DETAIL F 7PR
N.T.S.

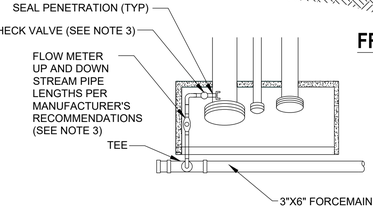


NOTES:
1. ELECTRICAL AND POWER CONNECTIONS TO BE PROVIDED BY OTHERS.
2. CAP ALL RISER PIPE ENDS WITH HDPE FLANGED ADAPTOR WITH D.I. BACKUP RING AND BLIND FLANGE150LB BOLT PATTERN AND STAINLESS STEEL BOLTS AND NUTS.
3. DISCHARGE ASSEMBLY VALVES, FITTINGS AND METERS, TO MATCH DISCHARGE HOSE PIPE DIAMETER PRIOR TO 3" FM REDUCER. ASSEMBLY MATERIALS SHALL BE HDPE OR PE AND BUTT FUSED TOGETHER.

SIDE ELEVATION



FRONT ELEVATION



ASSMBLY DETAIL

LEACHATE PUMP RISER HEADWALL AND DISCHARGE ASSEMBLY

DETAIL G 7PR
N.T.S.

ISSUED FOR CONSTRUCTION

nm811 Know what's below. Call before you dig.

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER

NO.	REVISION	DATE
	REVISED RISER PIPE TRENCH	4/12/22

SHEET TITLE: DISPOSAL CELL E-1 GRADING PROFILES AND DETAILS
PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO
CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
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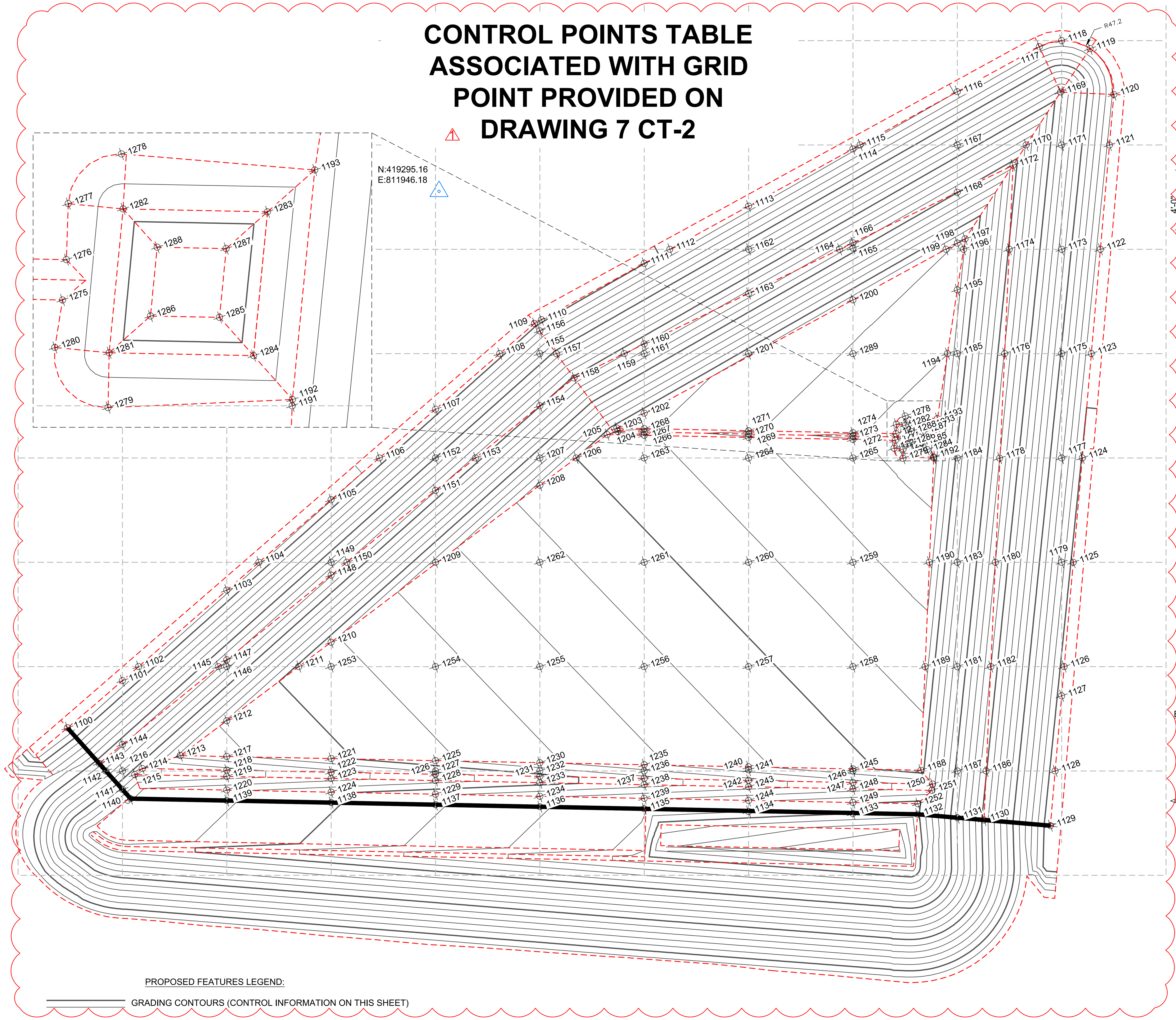
(602) 840-2396

ACAD FILE: -
APP. BY: MPB
DWN. BY: MPB
CHK. BY: -
PROJ. NO: 01222034.00
DSN. BY: MPB

DATE: 02-16-2022
SCALE: AS SHOWN
SHEET: 7PR

CONTROL POINTS TABLE ASSOCIATED WITH GRID POINT PROVIDED ON DRAWING 7 CT-2

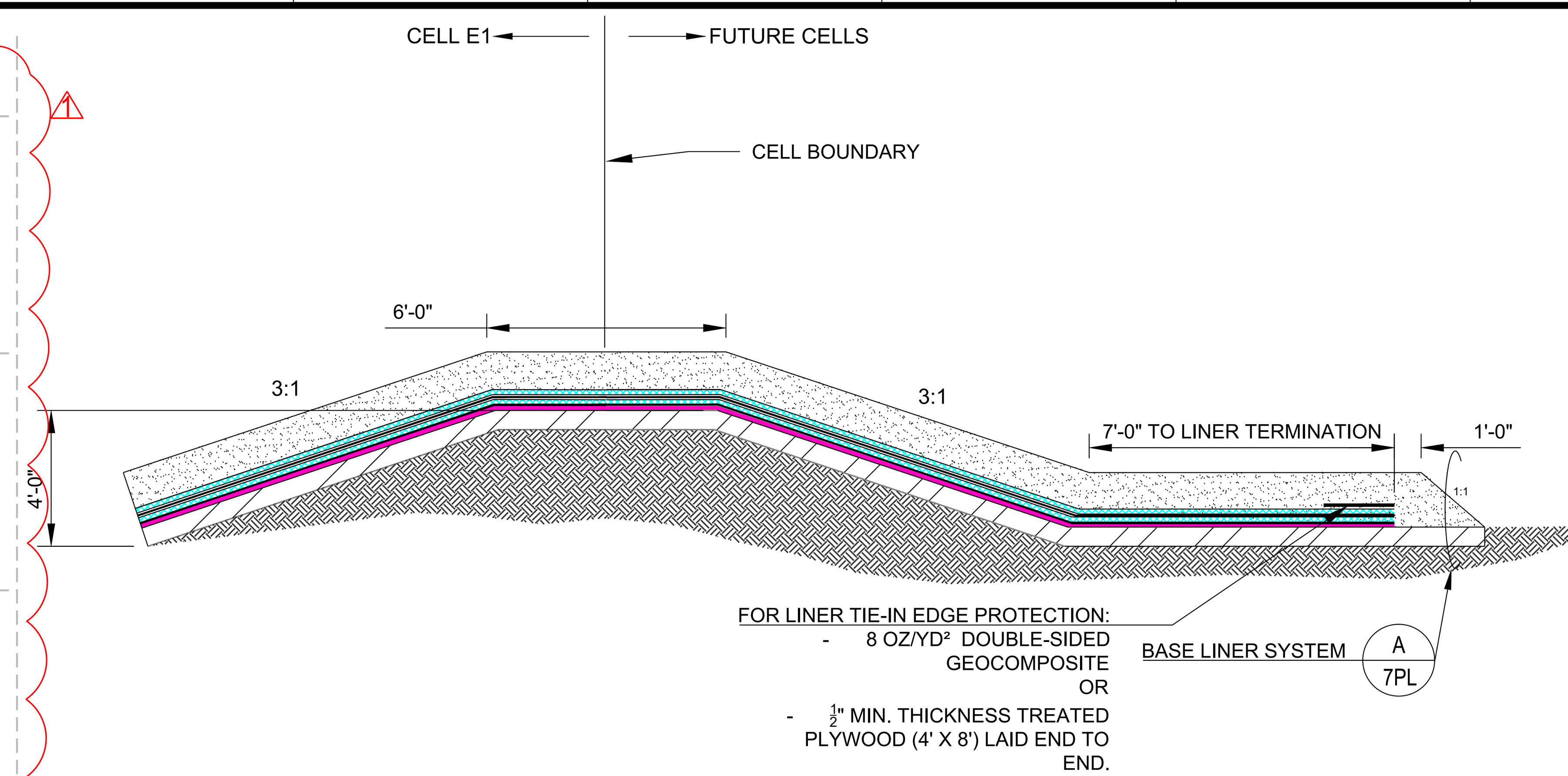


PROPOSED FEATURES LEGEND:

GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)

GRADING BREAK LINE

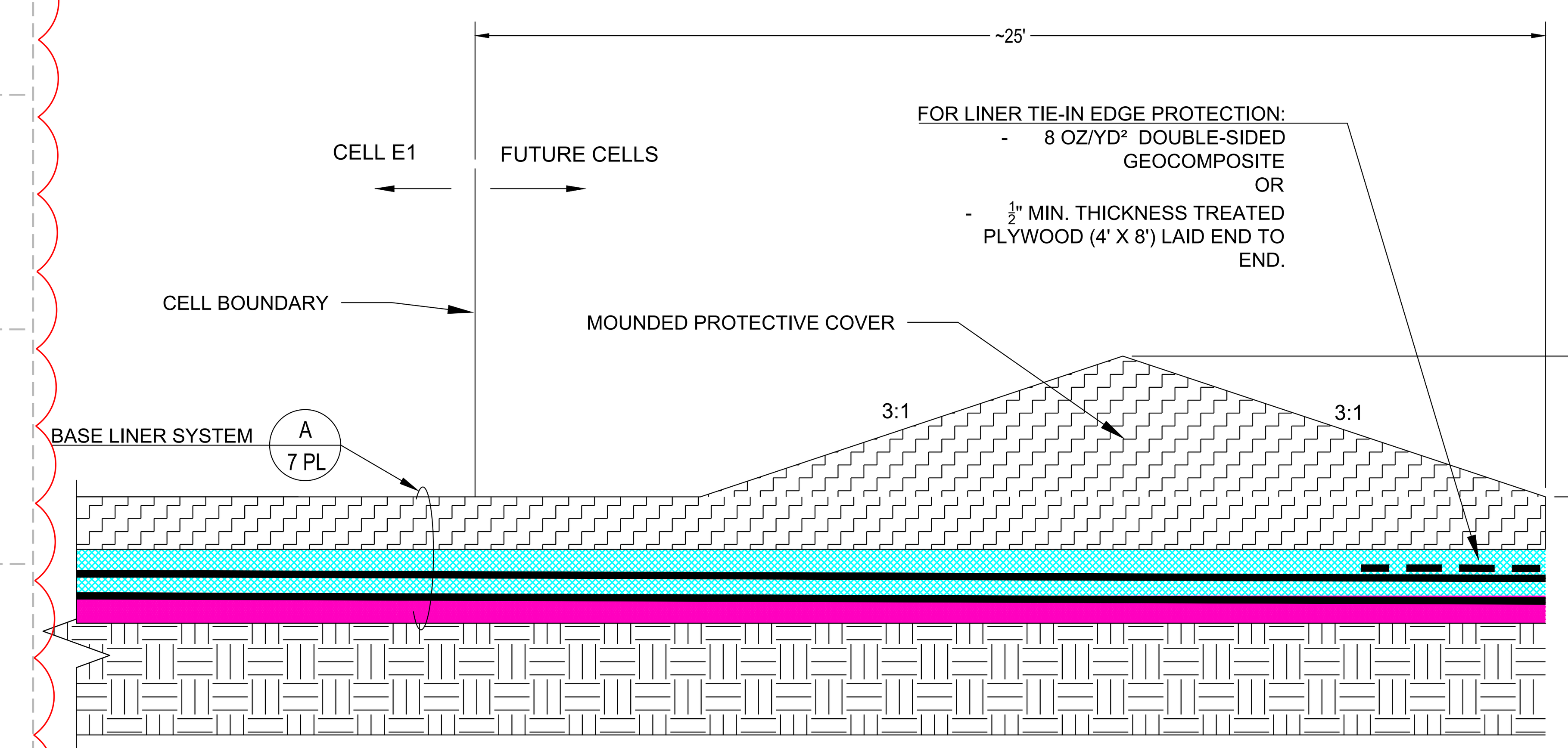
LINER CERTIFICATION GRID LINES



FLOOR CELL DIVIDER BERM AND LINER TERMINATION

DETAIL H 7CT-1

N.T.S.



SIDE SLOPE CELL DIVIDER BERM AND LINER TERMINATION

DETAIL I 7CT-1

N.T.S.

30 0 15 30

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER
3/15/22

NO.	REVISION	DATE
1	REVISED CERTIFICATION GRID	3/15/22

SHEET TITLE: DISPOSAL CELL E-1 CERTIFICATION GRID AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
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6100 MAPLE AVENUE SUITE 118
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PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: ENGINEERS

nm811 Know what's below. Call before you dig.

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 7CT-1

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1100	418924.94	811442.14	3353.86	3353.86	CERT POINT
1101	418950.56	811506.63	3353.51	3353.51	CERT POINT
1102	418958.23	811525.69	3353.41	3353.41	CERT POINT
1103	418999.98	811629.41	3352.85	3352.85	CERT POINT
1104	419015.24	811667.30	3352.65	3352.65	CERT POINT
1105	419049.40	811752.18	3352.19	3352.19	CERT POINT
1106	419072.24	811808.91	3351.89	3351.89	CERT POINT
1107	419098.83	811874.96	3351.53	3351.53	CERT POINT
1108	419129.24	811950.52	3351.13	3351.13	CERT POINT
1109	419145.70	811991.41	3350.88	3350.88	CERT POINT
1110	419146.99	811998.91	3350.82	3350.82	CERT POINT
1111	419165.98	812109.61	3350.10	3350.10	CERT POINT
1112	419170.72	812137.22	3349.93	3349.93	CERT POINT
1113	419185.26	812222.01	3349.39	3349.39	CERT POINT
1114	419204.55	812334.42	3348.69	3348.69	CERT POINT
1115	419205.89	812342.23	3348.64	3348.64	CERT POINT
1116	419223.83	812446.82	3347.98	3347.98	CERT POINT
1117	419238.99	812535.14	3347.42	3347.42	CERT POINT
1118	419237.61	812557.25	3347.65	3347.65	CERT POINT
1119	419221.46	812580.62	3347.95	3347.95	CERT POINT
1120	419172.51	812587.78	3348.49	3348.49	CERT POINT
1121	419128.13	812568.06	3348.74	3348.74	CERT POINT
1122	419036.40	812527.30	3349.24	3349.24	CERT POINT
1123	418944.67	812486.54	3349.74	3349.74	CERT POINT
1124	418852.94	812445.79	3350.24	3350.24	CERT POINT
1125	418761.22	812405.03	3350.74	3350.74	CERT POINT
1126	418669.49	812364.27	3351.25	3351.25	CERT POINT
1127	418643.81	812352.86	3351.39	3351.39	CERT POINT
1128	418577.76	812323.51	3351.75	3351.75	CERT POINT
1129	418529.64	812302.13	3352.01	3351.96	CERT POINT
1130	418555.51	812243.74	3330.72	3331.06	CERT POINT
1131	418565.91	812220.28	3322.17	3322.48	CERT POINT
1132	418581.38	812185.35	3309.44	3309.70	CERT POINT
1133	418602.21	812127.02	3310.00	3310.00	CERT POINT
1134	418636.61	812033.10	3312.00	3312.00	CERT POINT
1135	418671.65	811939.40	3314.21	3314.56	CERT POINT
1136	418706.08	811845.49	3316.21	3316.56	CERT POINT
1137	418740.51	811751.59	3318.21	3318.56	CERT POINT
1138	418774.94	811657.68	3320.21	3320.56	CERT POINT
1139	418809.37	811563.77	3322.21	3322.56	CERT POINT
1140	418841.12	811477.20	3324.06	3324.06	CERT POINT
1141	418851.94	811472.67	3327.59	3327.59	CERT POINT
1142	418873.89	811463.49	3335.52	3335.52	CERT POINT
1143	418882.88	811459.73	3338.77	3338.77	CERT POINT
1144	418892.74	811486.72	3338.31	3340.42	CERT POINT
1145	418933.36	811597.94	3336.44	3338.55	CERT POINT
1146	418930.73	811605.56	3334.65	3336.76	CERT POINT
1147	418936.92	811607.69	3336.28	3338.39	CERT POINT
1148	418981.10	811728.67	3334.24	3336.35	CERT POINT
1149	418992.73	811732.67	3337.29	3339.40	CERT POINT
1150	418987.80	811746.99	3333.93	3336.04	CERT POINT
1151	419025.28	811849.64	3332.20	3334.31	CERT POINT
1152	419054.72	811859.78	3339.94	3342.05	CERT POINT
1153	419042.23	811896.05	3331.42	3333.53	CERT POINT
1154	419069.47	811970.62	3330.16	3332.27	CERT POINT
1155	419116.72	811986.89	3342.58	3344.69	CERT POINT
1156	419137.34	811993.99	3347.98	3350.09	CERT POINT
1157	419111.54	812001.92	3339.03	3341.14	CERT POINT
1158	419083.99	812010.39	3329.47	3331.59	CERT POINT
1159	419090.37	812063.41	3328.23	3330.34	CERT POINT
1160	419092.90	812084.45	3327.74	3329.85	CERT POINT
1161	419084.16	812081.44	3325.07	3327.18	CERT POINT
1162	419146.16	812208.55	3337.43	3339.54	CERT POINT
1163	419106.17	812194.78	3325.19	3327.30	CERT POINT
1164	419117.75	812291.04	3322.97	3325.08	CERT POINT
1165	419114.69	812303.47	3321.19	3323.30	CERT POINT
1166	419119.44	812305.11	3322.65	3324.76	CERT POINT
1167	419175.59	812430.21	3333.22	3335.33	CERT POINT
1168	419132.72	812415.44	3320.10	3322.21	CERT POINT
1169	419191.29	812540.33	3331.48	3333.59	CERT POINT
1170	419154.09	812492.67	3322.29	3324.40	CERT POINT
1171	419143.04	812524.76	3333.55	3335.66	CERT POINT
1172	419139.80	812474.37	3318.75	3320.86	CERT POINT
1173	419048.49	812492.20	3336.93	3339.04	CERT POINT
1174	419064.82	812444.77	3320.29	3322.40	CERT POINT
1175	418953.93	812459.65	3340.31	3342.42	CERT POINT
1176	418971.71	812408.02	3322.20	3324.31	CERT POINT

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1177	418859.38	812427.09	3343.68	3345.79	CERT POINT
1178	418878.49	812370.87	3324.00	3326.11	CERT POINT
1179	418764.83	812394.53	3347.06	3349.17	CERT POINT
1180	418785.49	812334.52	3326.01	3328.12	CERT POINT
1181	418702.83	812267.42	3317.27	3319.38	CERT POINT
1182	418692.39	812297.77	3327.92	3330.03	CERT POINT
1183	418797.39	812299.98	3313.90	3316.01	CERT POINT
1184	418891.94	812332.54	3310.52	3312.63	CERT POINT
1185	418986.49	812365.09	3307.14	3309.25	CERT POINT
1186	418599.28	812261.02	3329.83	3331.94	CERT POINT
1187	418608.28	812234.87	3320.65	3322.76	CERT POINT
1188	418620.28	812202.09	3309.12	3311.23	CERT POINT
1189	418712.87	812238.27	3307.09	3309.16	CERT POINT
1190	418806.09	812274.70	3305.05	3307.14	CERT POINT
1191	418899.31	812311.13	3303.01	3305.12	CERT POINT
1192	418900.24	812311.49	3302.99	3305.10	CERT POINT
1193	418933.74	812326.79	3302.93	3305.04	CERT POINT
1194	418989.56	812356.42	3304.01	3306.12	CERT POINT
1195	419044.28	812384.99	3305.07	3307.18	CERT POINT
1196	419079.09	812403.32	3305.75	3307.86	CERT POINT
1197	419088.00	812408.01	3305.92	3308.03	CERT POINT
1198	419086.59	812399.56	3305.99	3308.10	CERT POINT
1199	419084.56	812387.44	3306.08	3308.19	CERT POINT
1200	419067.77	812287.32	3306.84	3308.95	CERT POINT
1201	419051.60	812175.99	3308.50	3310.61	CERT POINT
1202	419030.14	812062.84	3308.54	3310.65	CERT POINT
1203	419025.21	812033.43	3308.77	3310.88	CERT POINT
1204	419021.86	812033.21	3307.68	3310.84	CERT POINT
1205	419022.29	812022.60	3308.95	3311.06	CERT POINT
1206	419010.83	811987.24	3309.99	3312.10	CERT POINT
1207	419022.17	811954.33	3317.73	3319.84	CERT POINT
1208	418997.41	811945.81	3311.22	3313.33	CERT POINT
1209	418960.17	811827.22	3315.08	3317.19	CERT POINT
1210	418920.27	811707.72	3318.24	3320.35	CERT POINT
1211	418908.29	811670.74	3319.34	3321.45	CERT POINT
1212	418881.70	811588.68	3321.76	3323.87	CERT POINT
1213	418864.57	811535.80	3323.32	3325.43	CERT POINT
1214	418864.77	811497.19	3328.37	3330.48	CERT POINT
1215	418861.58	811488.48	3328.51	3330.62	CERT POINT
1216	418868.73	811478.47	3332.00	3334.07	CERT POINT
1217	418849.27	811577.51	3322.43	3324.54	CERT POINT
1218	418836.89	811573.25	3326.75	3328.75	CERT POINT
1219	418831.21	811571.29	3326.74	3328.74	CERT POINT
1220	418818.83	811567.03	3322.42	3324.53	CERT POINT
1221	418814.84	811671.42	3320.43	3322.54	CERT POINT
1222	418802.46	811667.15	3324.75	3326.75	CERT POINT
1223	418796.78	811665.20	3324.74	3326.74	CERT POINT
1224	418784.40	811660.94	3320.42	3322.53	CERT POINT
1225	418780.41	811765.33	3318.43	3320.54	CERT POINT
1226	418771.07	811762.11	3321.69	3323.80	CERT POINT
1227	418768.03	811761.06	3322.75	3324.75	CERT POINT
1228	418762.35	811759.11	3322.74	3324.74	CERT POINT
1229	418749.97	811754.84	3318.42	3320.52	CERT POINT
1230	418745.98	811859.23	3316.43	3318.54	CERT POINT
1231	418738.51	811856.66	3319.03	3321.14	CERT POINT
1232	418733.60	811854.97	3320.75	3322.75	CERT POINT
1233	418727.92	811853.01	3320.74	3322.74	CERT POINT
1234	418715.54	811848.75	3316.42	3318.52	CERT POINT
1235	418711.55	811953.14	3314.43	3316.54	CERT POINT
1236	418705.95	811951.21	3316.38	3318.49	CERT POINT
1237	418699.17	811948.87	3318.74	3320.74	CERT POINT
1238	418693.49	811946.92	3318.74	3320.74	CERT POINT
1239	418681.11	811942.66	3314.42	3316.52	CERT POINT
1240	418677.12	812047.05	3312.43	3314.54	CERT POINT
1241	418674.29	812046.07	3313.42	3315.53	CERT POINT
1242	418664.74	812042.78	3316.74	3318.74	CERT POINT
1243	418659.06	812040.83	3316.74	3318.74	CERT POINT
1244	418646.68	812036.56	3312.41	3314.52	CERT POINT
1245	418642.69	812140.95	3310.43	3312.54	CERT POINT
1246	418640.84	812140.32	3311.07	3313.18	CERT POINT
1247	418630.31	812136.69	3314.74	3316.74	CERT POINT
1248	418624.63	812134.73	3314.74	3316.74	CERT POINT
1249	418612.25	812130.47	3310.41	3312.52	CERT POINT
1250	418604.04	812208.33	3313.22	3315.33	CERT POINT
1251	418598.56	812205.83	3313.23	3315.34	CERT POINT
1252	418590.84	812188.85	3309.17	3311.28	CERT POINT
1253	418898.18	811700.11	3318.70	3320.70	CERT POINT
1254	418865.62	811794.66	3316.66	3318.66	CERT POINT

CELL E1 CERTIFICATION POINTS TABLE

ID	NORTHING	EASTING	SUBGRADE EL	PROTECTIVE COVER EL	DESCRIPTION
1255	418833.06	811889.22	3314.62	3316.62	CERT POINT
1256	418800.51	811983.77	3312.58	3314.58	CERT POINT
1257	418767.95	812078.32	3310.54	3312.54	CERT POINT
1258	418735.39	812172.87	3308.49	3310.51	CERT POINT
1259	418829.94	812205.43	3306.53	3308.55	CERT POINT
1260	418862.50	812110.88	3308.58	3310.58	CERT POINT
1261	418895.06	812016.33	3310.62	3312.62	CERT POINT
1262	418927.61	811921.77	3312.66	3314.66	CERT POINT
1263	418989.61	812048.88	3308.66	3310.66	CERT POINT
1264	418957.05	812143.43	3306.62	3308.62	CERT POINT
1265	418924.50	812237.99	3304.57	3306.59	CERT POINT
1266	419010.09	812055.93	3308.24	3310.30	CERT POINT
1267	419013.14	812056.98	3307.18	3310.29	CERT POINT
1268	419016.19	812058.03	3308.24	3310.31	CERT POINT
1269	418975.66	812149.84	3306.24	3308.24	CERT POINT
1270	418978.71	812150.89	3305.18	3308.18	CERT POINT
1271	418981.76	812151.94	3306.24	3308.24	CERT POINT
1272	418941.23	812243.75	3304.24	3306.24	CERT POINT
1273	418944.28	812244.80	3303.18	3306.18	CERT POINT
1274	418947.33	812245.85	3304.24	3306.24	CERT POINT
1275	418927.22	812281.95	3303.43	3305.43	CERT POINT
1276	418933.11	812284.63	3303.42	3305.42	CERT POINT
1277	418941.47	812287.83	3303.59	3305.59	CERT POINT
1278	418946.21	812298.44	3303.59	3305.59	CERT POINT
1279	418908.61	812283.23	3303.61	3305.61	CERT POINT
1280	418920.46	812278.32	3303.60	3305.60	CERT POINT
1281	418916.84	812286.24	3300.69	3305.44	CERT POINT
1282	418937.82	812295.83	3300.66	3305.40	CERT POINT
1283	418929.88	812317.49	3300.66	3304.94	CERT POINT
1284	418908.89	812307.90	3300.69	3304.98	CERT POINT
1285	418916.44	812304.75	3298.66	3304.97	CERT POINT
1286	418920.24	812294.40	3298.66	3305.19	CERT POINT
1287	418926.47	812309.34	3298.66	3304.95	CERT POINT
1288	418930.27	812298.98	3298.66	3305.17	CERT POINT
1289	419019.05	812270.54	3305.79	3307.79	CERT POINT

MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER, 3/15/22

NO.	REVISION	DATE
1	REVISED CERTIFICATION GRID	3/15/22

SHEET TITLE: DISPOSAL CELL E-1 CERTIFICATION GRID TABLES

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS, NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY, LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118, TEMPE, ARIZONA 85283, (602) 840-2596

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: F:\ENGINEERS

nm811 Know what's below. Call before you dig.

ISSUED FOR CONSTRUCTION

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 7CT-2

EXISTING FEATURES LEGEND:

- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

PROPOSED FEATURES LEGEND:

- 1-FT GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- 2-FT GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- 3-STRAND BARBED WIRE FENCE (A / 11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- GRADING AREA OTHER SHEETS
- CALICHE/GRAVEL ROADWAY (A / 8PL)
- GEOSYNTHETIC LINED AREA
- CONCRETE PADS (DWG / 9PL)
- GRADING BREAK LINE
- APPROXIMATED TRAFFIC LANE

NOTES:

1. BACKFILL THICKNESS IN EXCESS OF 8-INCHES NECESSARY TO REACH ROAD TOP GRADE SHOWN MAY BE ACHIEVED USING NATIVE SOIL BACKFILLED AND COMPACTED TO 95% OF STANDARD PROCTOR (ASTM D-698). TOP OF SOIL BACKFILL TO WITHIN A MAXIMUM OF 8-INCHES TO TOP OF ROAD GRADES SHOWN AND TOPPED 8-INCHES MINIMUM ROAD BASE MATERIAL TO ACHIEVE TOP OF ROAD GRADES.
2. PROPOSED GRADES/CONTOURS SHOWN REPRESENT THE FINISHED GRADE ELEVATION TOP OF ROAD BASE MATERIAL.
3. EXISTING PLUGGED OIL WELL WITHIN THE WORK AREA SHALL BE CUT BELOW GRADE AND CAPPED IN ACCORDANCE WITH APPLICABLE NEW MEXICO REGULATIONS. CONTRACTOR SHALL COORDINATE THIS WORK WITH OWNER.
4. CONTRACTOR SHALL COORDINATE WITH OWNER TO OBTAIN PERMITS NECESSARY TO CONSTRUCT WITHIN THE NEW MEXICO HIGHWAY 2 RIGHT-OF-WAY.

E:813526.49

MATCH EXISTING ROAD EDGE ELEVATION OF HIGHWAY 2

2:1 MAX SLOPE DAYLIGHT TO EXISTING (SEE NOTE 1)

R=75'

ROAD SEGMENT 1 (40-FT WIDE)

2:1 MAX SLOPE DAYLIGHT TO EXISTING (SEE NOTE 1)

N:418825.22
E:813489.27

YARD GRADING (DWG 5PL)

N:419295.16
E:811946.18

YARD GRADING (DWG 5PL)

SCALE HOUSE AND TRUCK SCALES PROVIDED BY OTHERS.

LEACHATE POND GRADING (DWG 6PL)

CELL E-1 GRADING (DWG 7PL)

ROAD SEGMENT 2 (60-FT WIDE)

YARD GRADING (DWG 5PL)

BATTLE AXE ROAD (HWY 2)

FILL TO CELL WALL AS NEEDED TO MAINTAIN FLAT ROAD TOP

8%

2:1 MAX SLOPE DAYLIGHT TO EXISTING (SEE NOTE 1)

ROAD SEGMENT 3 (40-FT WIDE)

R=25'

R=85'

8+34

SEE POINTS TABLE PROVIDED ON "DRAWING 8 PTS"

2:1 MAX SLOPE DAYLIGHT TO EXISTING (SEE NOTE 1)

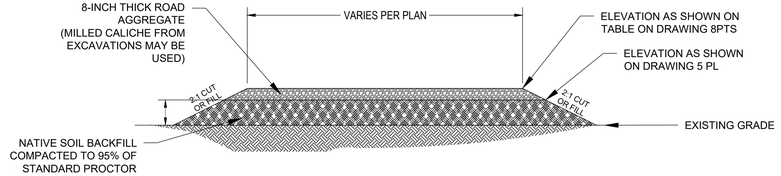
R=75'

DWG 9PL

DWG 9PL

DWG 9PL

YARD GRADING (DWG 5PL)



GRAVEL DRIVEWAY PROFILE (TYPICAL)

DETAIL A / 8PL (N.T.S.)

80 0 40 80
SCALE IN FEET

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD — NEW MEXICO — 19240 — 2/16/22 — PROFESSIONAL ENGINEER

DATE | REVISION | NO.

SHEET TITLE: GRAVEL/CALICHE ROADWAY GRADING PLAN AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-2500 FAX (562) 427-0805

ACAD FILE: F:\ENGINEERS | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB

PROJ. NO. 01222034.00 | DSN. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 8PL

ROAD SEGMENT 1 CONTROL POINTS					
STATION	CL NORTHING	CL EASTING	CL ELEVATION	RIGHT ROAD EDGE EL*	LEFT ROAD EDGE EL*
0+00	419032.3	813842.1	EX HWY 2 EL	EX HWY 2 EL	EX HWY 2 EL
1+00	419037.1	813742.2	3342.2	3342.5	3342.9
2+00	419041.9	813642.3	3343.2	3343.1	3343.2
3+00	419046.8	813542.4	3342.6	3343.6	3343.5
4+00	419051.6	813442.5	3343.7	3343.7	3343.6
5+00	419056.4	813342.6	3343.6	3343.7	3343.5
5+71	419059.9	813271.5	3343.6	3343.7	3343.5

*20-ft offset from CL

ROAD SEGMENT 2 CONTROL POINTS					
STATION	CL NORTHING	CL EASTING	CL ELEVATION	RIGHT ROAD EDGE EL*	LEFT ROAD EDGE EL*
0+00	418796.8	812536.1	3343.1	3343.2	3343.1
1+00	418704.1	812498.4	3342.8	3342.9	3342.8
2+00	418611.5	812460.8	3342.6	3342.6	3342.5
2+96	418522.3	812424.6	3342.3	3342.3	3342.2

*30-ft offset from CL

ROAD SEGMENT 3 CONTROL POINTS					
STATION	CL NORTHING	CL EASTING	CL ELEVATION	RIGHT ROAD EDGE EL*	LEFT ROAD EDGE EL*
0+00	418349.3	812237.6	3343.7	3343.3	3344.1
1+00	418389.4	812146.0	3343.8	3343.4	3344.2
2+00	418429.6	812054.4	3343.9	3343.6	3344.2
3+00	418469.8	811962.9	3343.9	3343.7	3344.2
4+00	418509.9	811871.2	3344.2	3343.9	3344.4
5+00	418550.0	811779.6	3344.1	3343.9	3344.3
6+00	418590.1	811688.1	3344.1	3344.0	3344.3
7+00	418630.5	811596.6	3344.2	3344.1	3344.3
8+00	418670.4	811504.9	3344.3	3344.2	3344.3
8+34	418684.1	811473.7	3344.3	3344.3	3344.3

*20-ft offset from CL

ROAD EDGE CONTROL POINTS				
STATION	NORTHING	EASTING	ELEVATION	DESCRIPTION
2000	419041.2	813270.4	3343.5	ROAD EDGE
2001	418414.9	812487.1	3341.9	ROAD EDGE
2002	418366.4	812245.1	3343.3	ROAD EDGE
2003	418949.7	812994.7	3343.4	ROAD EDGE
2004	418332.6	812229.2	3344.1	ROAD EDGE
2005	418909.1	812719.4	3343.4	ROAD EDGE
2006	418511.8	812450.9	3342.2	ROAD EDGE
2007	418172.5	812965.2	3340.9	ROAD EDGE
2008	417824.9	812791.6	0.0	ROAD EDGE
2009	418089.1	812267.5	0.0	ROAD EDGE
2010	418533.1	812397.7	0.0	ROAD EDGE
2011	418156.4	812242.7	0.0	ROAD EDGE
2012	418407.5	812346.5	3342.0	ROAD EDGE
2013	418786.3	812562.8	3343.1	ROAD EDGE
2014	419003.5	812589.4	3343.7	ROAD EDGE
2015	419078.5	813272.5	3343.7	ROAD EDGE
2016	419084.9	813141.6	3343.7	ROAD EDGE
2031	418667.3	811466.1	3344.3	ROAD EDGE
2032	418667.4	811344.5	3344.3	ROAD EDGE
2033	418809.0	811284.2	3344.3	ROAD EDGE
2034	418871.2	811347.8	3345.3	ROAD EDGE
2035	418901.0	811648.2	3322.0	ROAD EDGE
2036	418863.5	811661.9	3322.1	ROAD EDGE
2037	418776.1	811421.7	3342.5	ROAD EDGE
2038	418728.1	811420.5	0.0	ROAD EDGE
2039	419055.9	813766.4	3341.7	ACCESS ROAD EDGE
2040	419017.3	813764.5	3342.8	ACCESS ROAD EDGE
2041	418807.6	812509.5	3343.2	ACCESS ROAD EDGE
2042	418701.5	811481.3	3344.3	ACCESS ROAD EDGE

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: GRAVEL/CALICHE ROADWAY GRADING CONTROL POINTS TABLES

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX (562) 427-0805

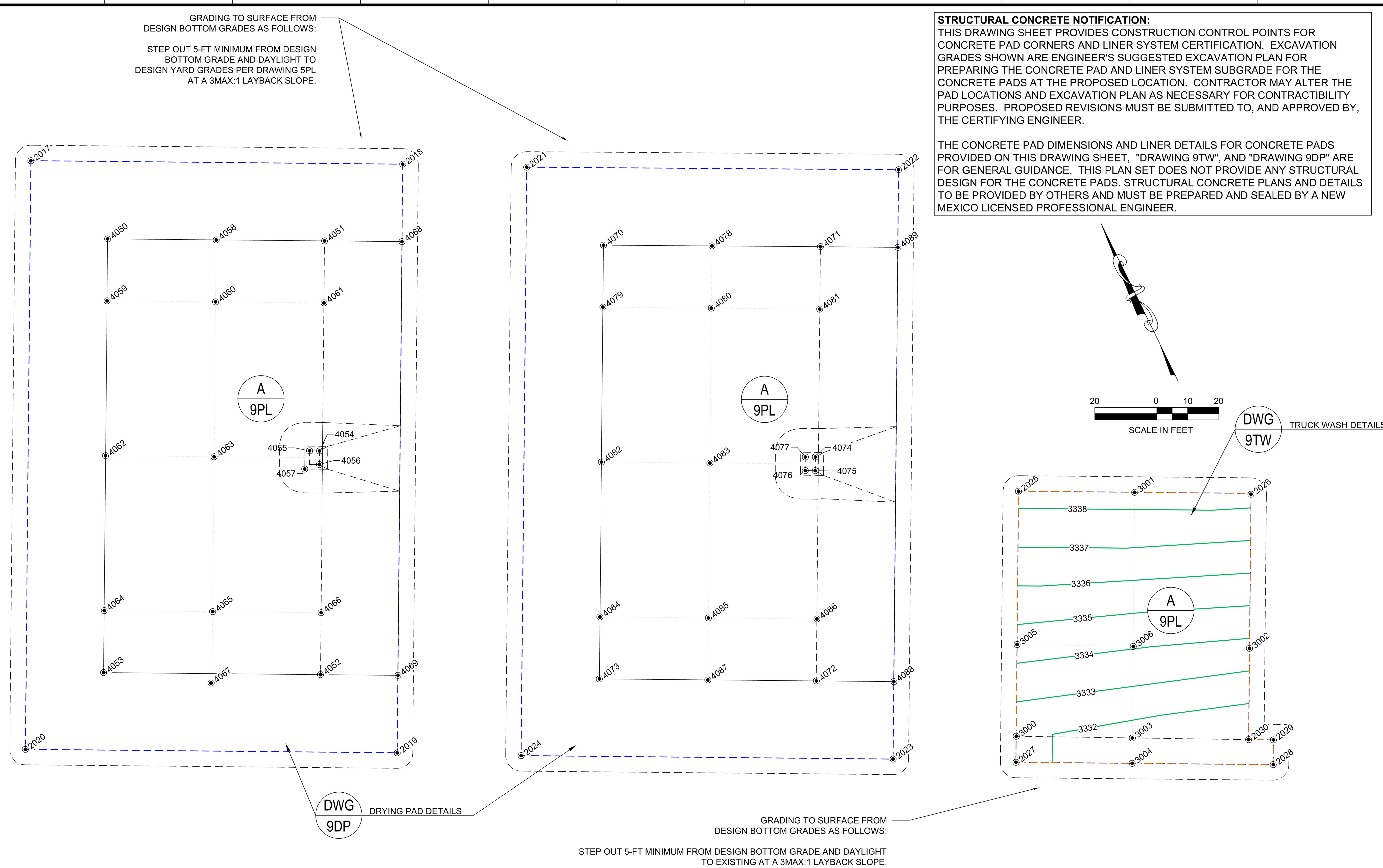
PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 8PTS

C:\Users\3268mpb\OneDrive – SCS Engineers\Desktop\WORK\North Ranch\McCloy\CELL E-1\PLANS\009 – TRUCKWASH GRADING.dwg Feb 25, 2022 – 11:2am By: 3268mpb



STRUCTURAL CONCRETE NOTIFICATION:
THIS DRAWING SHEET PROVIDES CONSTRUCTION CONTROL POINTS FOR CONCRETE PAD CORNERS AND LINER SYSTEM CERTIFICATION. EXCAVATION GRADES SHOWN ARE ENGINEER'S SUGGESTED EXCAVATION PLAN FOR PREPARING THE CONCRETE PAD AND LINER SYSTEM SUBGRADE FOR THE CONCRETE PADS AT THE PROPOSED LOCATION. CONTRACTOR MAY ALTER THE PAD LOCATIONS AND EXCAVATION PLAN AS NECESSARY FOR CONTRACTIBILITY PURPOSES. PROPOSED REVISIONS MUST BE SUBMITTED TO, AND APPROVED BY, THE CERTIFYING ENGINEER.

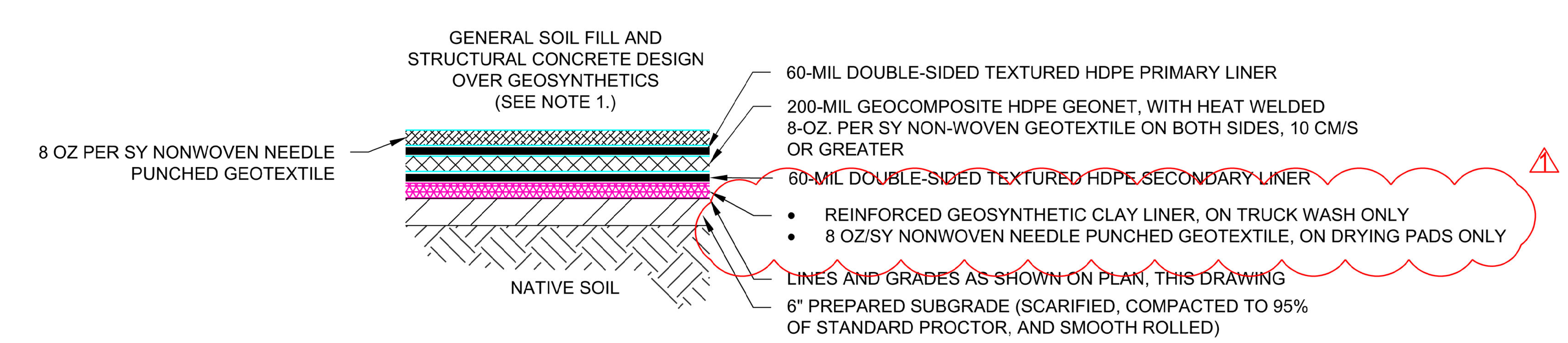
THE CONCRETE PAD DIMENSIONS AND LINER DETAILS FOR CONCRETE PADS PROVIDED ON THIS DRAWING SHEET, "DRAWING 9TW", AND "DRAWING 9DP" ARE FOR GENERAL GUIDANCE. THIS PLAN SET DOES NOT PROVIDE ANY STRUCTURAL DESIGN FOR THE CONCRETE PADS. STRUCTURAL CONCRETE PLANS AND DETAILS TO BE PROVIDED BY OTHERS AND MUST BE PREPARED AND SEALED BY A NEW MEXICO LICENSED PROFESSIONAL ENGINEER.

TRUCK WASH AND DRYING PAD EXCAVATION AND CERTIFICATION POINTS				
ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
2017	418283.30	812526.44	3339.60	DRYING PAD 1 EDGE
2018	418229.68	812633.80	3339.60	DRYING PAD 1 EDGE
2019	418059.70	812548.91	3339.60	DRYING PAD 1 EDGE
2020	418113.31	812441.56	3339.60	DRYING PAD 1 EDGE
2021	418211.29	812669.32	3339.30	DRYING PAD 2 EDGE
2022	418157.93	812776.81	3339.30	DRYING PAD 2 EDGE
2023	417987.74	812691.82	3339.30	DRYING PAD 2 EDGE
2024	418041.35	812584.46	3339.30	DRYING PAD 2 EDGE
2025	418047.73	812766.10	3338.45	TRUCK WASH
2026	418013.97	812833.08	3338.42	TRUCK WASH
2027	417969.44	812727.01	3332.12	TRUCK WASH
2028	417932.36	812801.26	3331.37	TRUCK WASH
2029	417939.52	812804.84	3331.37	TRUCK WASH
2030	417943.09	812797.68	3331.37	TRUCK WASH
3000	417976.96	812730.76	3332.12	TRUCK WASH CERT GRID
3001	418030.97	812799.65	3338.45	TRUCK WASH CERT GRID
3002	417969.49	812810.86	3333.69	TRUCK WASH CERT GRID
3003	417960.03	812764.22	3331.74	TRUCK WASH CERT GRID
3004	417952.69	812760.56	3331.74	TRUCK WASH CERT GRID
3005	418003.44	812743.99	3334.49	TRUCK WASH CERT GRID
3006	417986.46	812777.42	3334.07	TRUCK WASH CERT GRID
4050	418249.76	812537.64	3339.60	DRYING PAD 1 FLOOR
4051	418218.49	812600.26	3339.60	DRYING PAD 1 FLOOR
4052	418093.24	812537.72	3339.60	DRYING PAD 1 FLOOR
4053	418124.51	812475.09	3339.60	DRYING PAD 1 FLOOR
4054	418158.28	812569.08	3334.76	DRYING PAD 1 FLOOR
4055	418159.71	812566.22	3334.76	DRYING PAD 1 FLOOR
4056	418154.34	812567.11	3334.76	DRYING PAD 1 FLOOR
4057	418155.10	812562.24	3335.26	DRYING PAD 1 FLOOR
4058	418234.12	812568.95	3339.60	DRYING PAD 1 LINER CERT GRID
4059	418231.87	812528.70	3339.60	DRYING PAD 1 LINER CERT GRID
4060	418216.23	812560.02	3338.99	DRYING PAD 1 LINER CERT GRID
4061	418200.59	812591.33	3338.99	DRYING PAD 1 LINER CERT GRID
4062	418187.13	812506.36	3339.60	DRYING PAD 1 LINER CERT GRID
4063	418171.50	812537.68	3338.60	DRYING PAD 1 LINER CERT GRID
4064	418142.40	812484.03	3339.60	DRYING PAD 1 LINER CERT GRID
4065	418126.77	812515.34	3338.99	DRYING PAD 1 LINER CERT GRID
4066	418111.13	812546.65	3338.99	DRYING PAD 1 LINER CERT GRID
4067	418106.28	812504.79	3339.60	DRYING PAD 1 LINER CERT GRID
4068	418207.32	812622.63	3339.60	DRYING PAD 1 LINER CERT GRID
4069	418082.07	812560.08	3339.60	DRYING PAD 1 LINER CERT GRID
4070	418177.80	812680.54	3339.30	DRYING PAD 2 FLOOR
4071	418146.68	812743.24	3339.30	DRYING PAD 2 FLOOR
4072	418021.28	812680.62	3339.30	DRYING PAD 2 FLOOR
4073	418052.55	812618.00	3339.30	DRYING PAD 2 FLOOR
4074	418086.37	812712.01	3334.47	DRYING PAD 2 FLOOR
4075	418082.43	812710.04	3334.47	DRYING PAD 2 FLOOR
4076	418083.86	812707.18	3334.47	DRYING PAD 2 FLOOR
4077	418087.80	812709.15	3334.47	DRYING PAD 2 FLOOR
4078	418162.24	812711.89	3339.30	DRYING PAD 2 LINER CERT GRID
4079	418159.91	812671.61	3339.30	DRYING PAD 2 LINER CERT GRID
4080	418144.27	812702.92	3338.70	DRYING PAD 2 LINER CERT GRID
4081	418128.64	812734.23	3338.69	DRYING PAD 2 LINER CERT GRID
4082	418115.18	812649.27	3339.30	DRYING PAD 2 LINER CERT GRID
4083	418099.54	812680.58	3338.30	DRYING PAD 2 LINER CERT GRID
4084	418070.44	812626.93	3339.30	DRYING PAD 2 LINER CERT GRID
4085	418054.81	812658.24	3338.70	DRYING PAD 2 LINER CERT GRID
4086	418039.17	812689.56	3338.70	DRYING PAD 2 LINER CERT GRID
4087	418036.91	812649.31	3339.30	DRYING PAD 2 LINER CERT GRID
4088	418010.11	812702.99	3339.30	DRYING PAD 2 LINER CERT GRID
4089	418135.51	812765.61	3339.30	DRYING PAD 2 LINER CERT GRID

EXISTING FEATURES LEGEND:

- SUBGRADE CONTOURS (LINER GRADE)
- GRADING LIMIT
- CONCRETE PAD LIMIT (SEE NOTE 2)
- LINER PLACEMENT AND CERTIFICATION LIMIT
- BREAKLINES
- CERTIFICATION GRID LINES
- LINER CERTIFICATION POINTS

NOTE:
1. STRUCTURAL CONCRETE PAD AND WALL DESIGN FOR TRUCK WASH AND DRYING PAD TO BE PROVIDED BY OTHERS. GENERAL SOIL FILL MUST BE SCREENED TO 1" MINUS PRIOR TO PLAYING OVER GEOSYNTHETIC MATERIALS.
2. GENERAL CONCRETE TRUCK WASH PAD DIMENSIONS AND TYPICAL LINER TERMINATION DETAILS ARE PROVIDED ON "DRAWING 9TW", CONCRETE DRYING PAD DIMENSIONS AND TYPICAL LINER TERMINATION DETAILS ARE PROVIDED ON "DRAWING 9DP".



TRUCK WASH AND DRYING PAD LINER PROFILE (TYPICAL)
DETAIL A / 9PL
SCALE: NOT TO SCALE

ISSUED FOR CONSTRUCTION

NO.	REVISION	DATE
1	CLARIFICATION TO DRYING PAD LINER	2/25/22

MICHAEL P. BRADFORD, NEW MEXICO, 19240, PROFESSIONAL ENGINEER

SHEET TITLE: TRUCK WASH AND DRYING PAD EXCAVATION PLAN
PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX. (562) 427-0805

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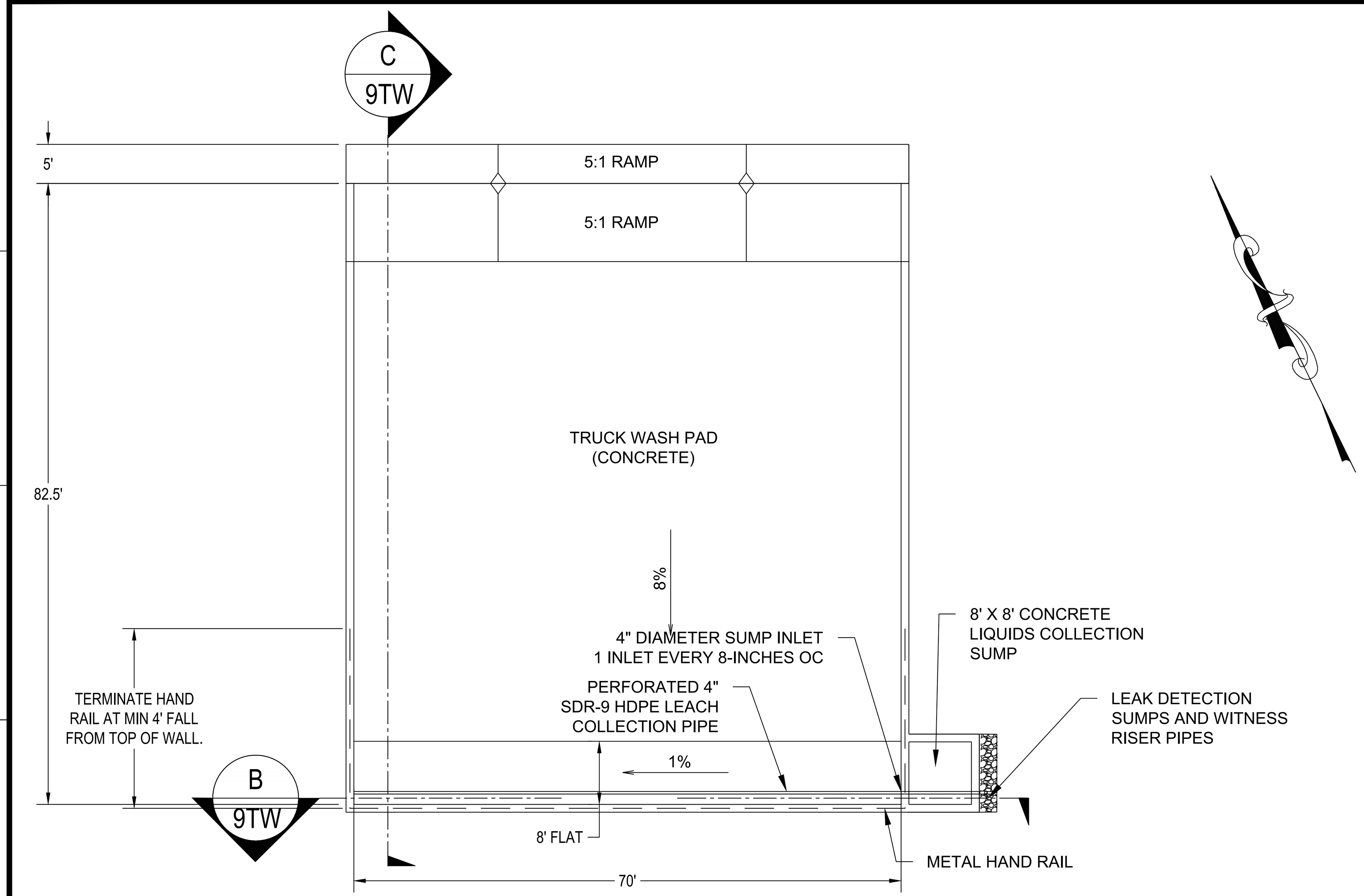
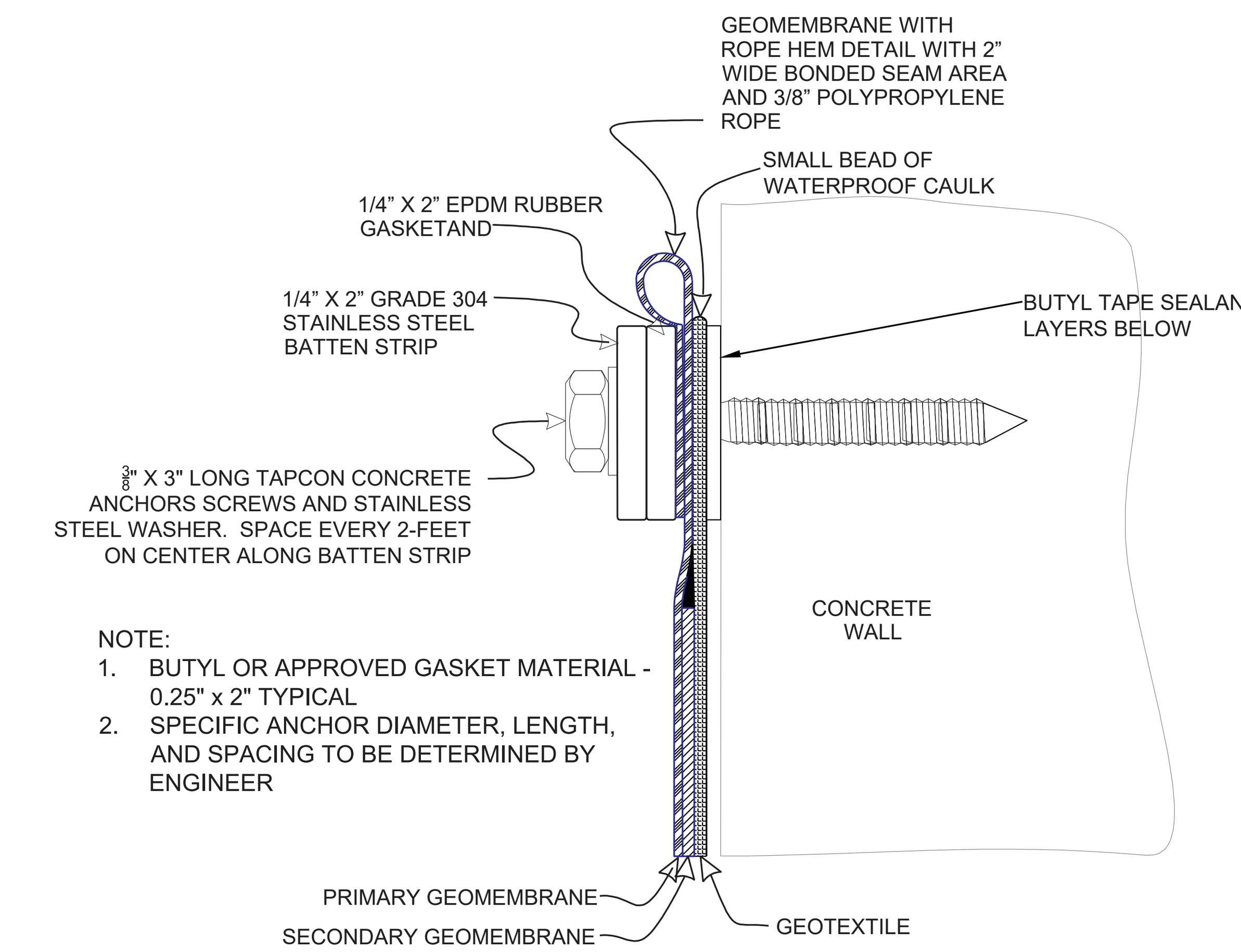
DSN. BY: MPB | CHK. BY: - | APP. BY: MPB

DATE: 02-16-2022
SCALE: AS SHOWN
SHEET: 9PL



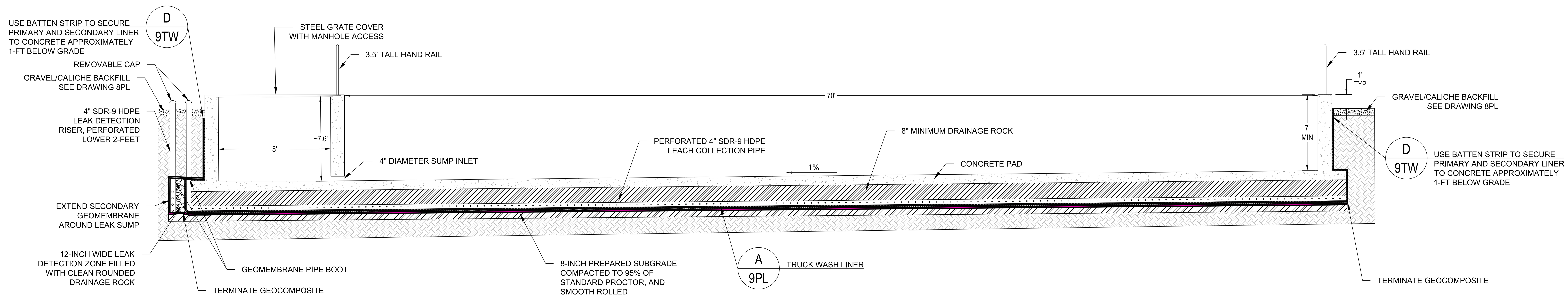
TRUCK WASH PAD DIMENSIONS PLAN

DETAIL A / 9TW
SCALE: NOT TO SCALE



CONCRETE BATTEN STRIP WITH ROPE HEM

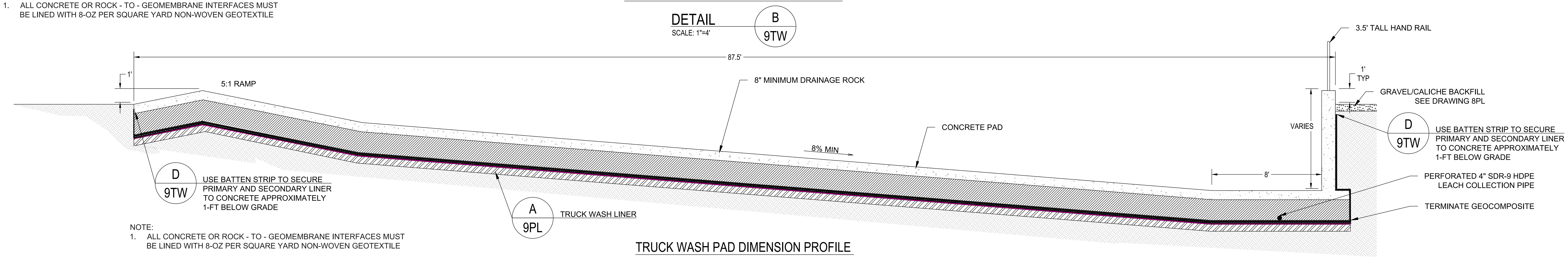
DETAIL D / 9TW
SCALE: NOT TO SCALE



NOTE:
1. ALL CONCRETE OR ROCK - TO - GEOMEMBRANE INTERFACES MUST BE LINED WITH 8-OZ PER SQUARE YARD NON-WOVEN GEOTEXTILE

TRUCK WASH PAD DIMENSION PROFILE

DETAIL B / 9TW
SCALE: 1"=4'



NOTE:
1. ALL CONCRETE OR ROCK - TO - GEOMEMBRANE INTERFACES MUST BE LINED WITH 8-OZ PER SQUARE YARD NON-WOVEN GEOTEXTILE

TRUCK WASH PAD DIMENSION PROFILE

DETAIL C / 9TW
SCALE: 1"=4'

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER
2/16/22

NO. | REVISION | DATE

SHEET TITLE: TRUCK WASH TYPICAL DIMENSIONS AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
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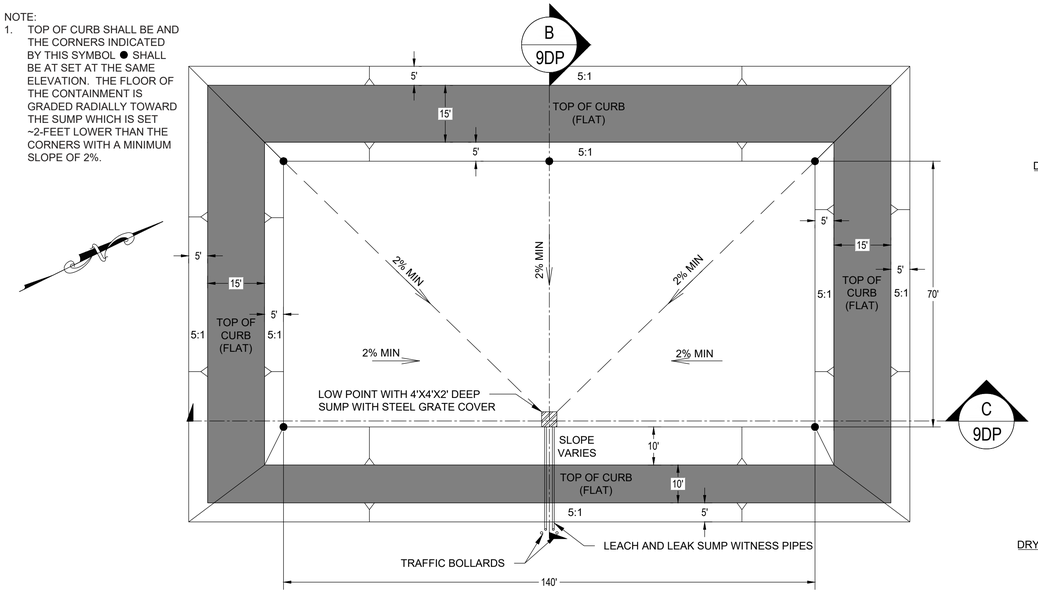
PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: F:/ENGINEERS

DATE: 02-16-2022
SCALE: AS SHOWN
SHEET: 9TW

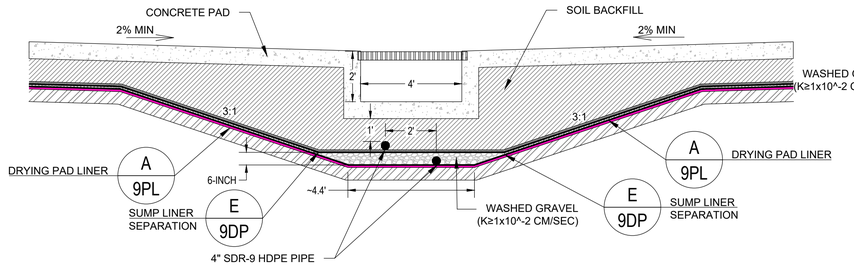
nm811 Know what's below. Call before you dig.

NOTE:
1. TOP OF CURB SHALL BE AND THE CORNERS INDICATED BY THIS SYMBOL ● SHALL BE AT SET AT THE SAME ELEVATION. THE FLOOR OF THE CONTAINMENT IS GRADED RADIALLY TOWARD THE SUMP WHICH IS SET ~2-FEET LOWER THAN THE CORNERS WITH A MINIMUM SLOPE OF 2%.

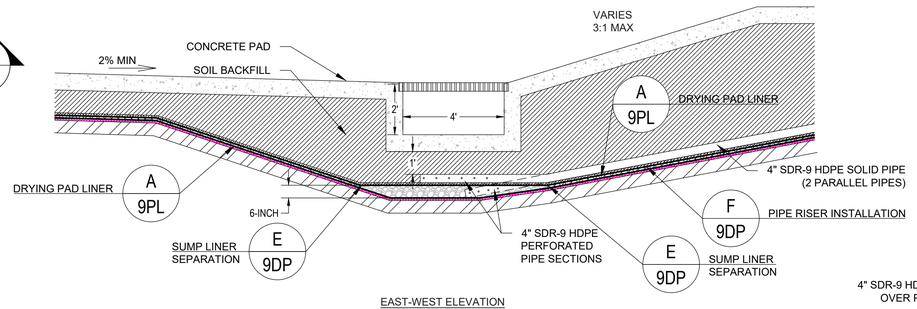


DRYING PAD DIMENSIONS PLAN

DETAIL A 9DP
SCALE: NOT TO SCALE



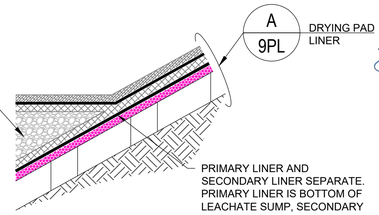
NORTH-SOUTH ELEVATION



EAST-WEST ELEVATION

DRYING PAD SUMP DETAIL

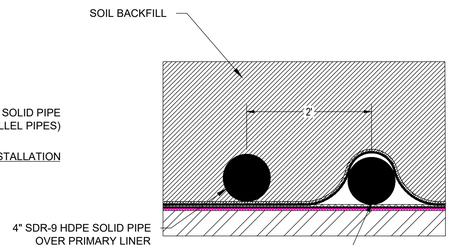
DETAIL D 9DP
SCALE: NOT TO SCALE



PRIMARY LINER AND SECONDARY LINER SEPARATE. PRIMARY LINER IS BOTTOM OF LEACHATE SUMP, SECONDARY LINER AND GCL IS BOTTOM OF LEAK DETECTION SUMP. GEOCOMPOSITE OR 8OZ PER SY NWNP GEOTEXTILE WRAP AROUND DRAINAGE ROCK IN LEAK DETECTION SUMP.

SUMP LINER SEPARATION

DETAIL E 9DP
SCALE: NOT TO SCALE



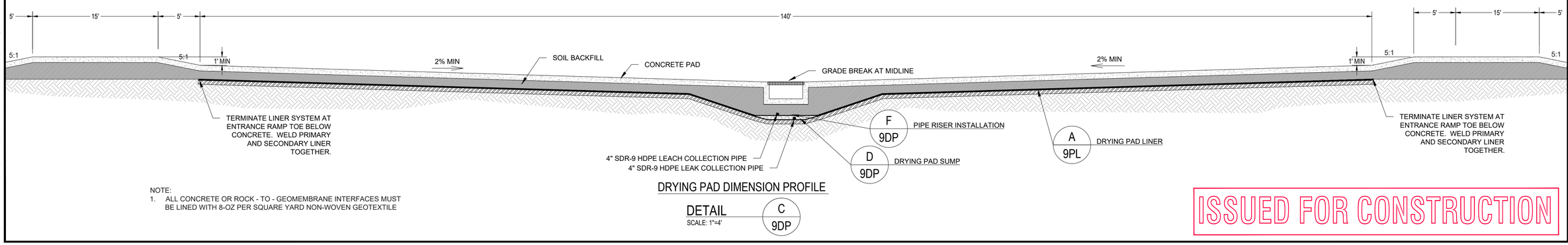
DRYING PAD WITNESS PIPE RISER DETAIL

DETAIL F 9DP
SCALE: NOT TO SCALE

NOTE:
1. ALL CONCRETE OR ROCK - TO - GEOMEMBRANE INTERFACES MUST BE LINED WITH 8-OZ PER SQUARE YARD NON-WOVEN GEOTEXTILE

DRYING PAD DIMENSION PROFILE

DETAIL B 9DP
SCALE: 1"=4'



NOTE:
1. ALL CONCRETE OR ROCK - TO - GEOMEMBRANE INTERFACES MUST BE LINED WITH 8-OZ PER SQUARE YARD NON-WOVEN GEOTEXTILE

DRYING PAD DIMENSION PROFILE

DETAIL C 9DP
SCALE: 1"=4'

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 2/16/22 PROFESSIONAL ENGINEER

DATE | REVISION | NO.

SHEET TITLE: TRUCK WASH AND DRYING PAD EXCAVATION PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE SUITE 290
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(858) 571-5500 FAX (562) 427-0805

PROJ. NO: 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | APP. BY: MPB | ACAD FILE: -

DATE: 02/16/22

SCALE:

SHEET: 9DP

EXISTING FEATURES LEGEND:

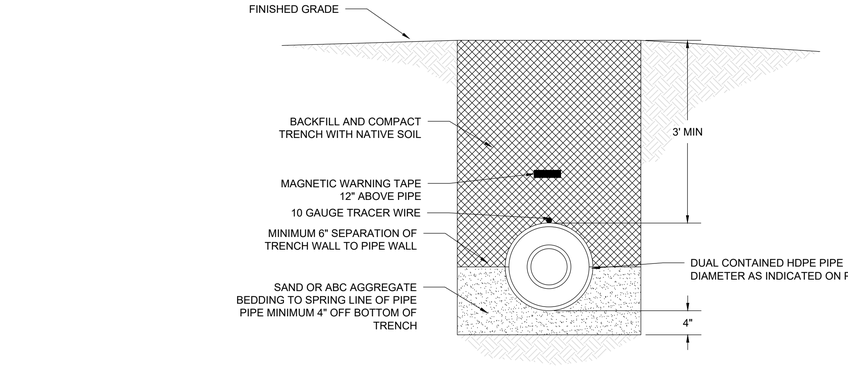
- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

PROPOSED FEATURES LEGEND:

- 1-FT GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- 2-FT GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- 3-STRAND BARBED WIRE FENCE (A / 11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- GRADING AREA OTHER SHEETS
- CALICHE/GRAVEL ROADWAY (A / 8PL)
- GEOSYNTHETIC LINED AREA
- CONCRETE PADS
- GRADING BREAK LINE
- TRAFFIC LANE CENTER LINE
- 3"X6" DUAL CONTAINED HDPE LEACHATE FORCEMAIN (APPROX LF AS SHOWN)
- 4"X8" DUAL CONTAINED HDPE LEACHATE FORCEMAIN (APPROX LF AS SHOWN) (A / 10PL)
- DUAL CONTAINED HDPE REDUCER
- DUAL CONTAINED HDPE VALVE
- STUB

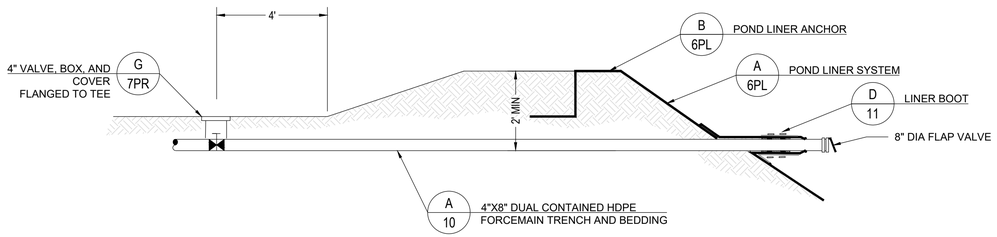
NOTES:

1. CONTRACTOR SHALL MAINTAIN A MINIMUM OFFSET OF 5-FEET FROM CONCRETE FOOTERS WITH FORCMAIN FLOWLINE.
2. FORCEMAIN ALIGNMENT SHOW IS SPECIFICALLY FOR IF THE PIPE IS BURIED DURING THIS PROJECT. PIPE WHEN BURIED MUST BE PLACED AS DETAILED TO PREVENT UNINTENTIONAL BURIAL DURING CELL CLOSURES. IF PIPE IS PLACED AT GRADE, OPERATIONS MAY ALIGN THE PIPE AS DESIRED.



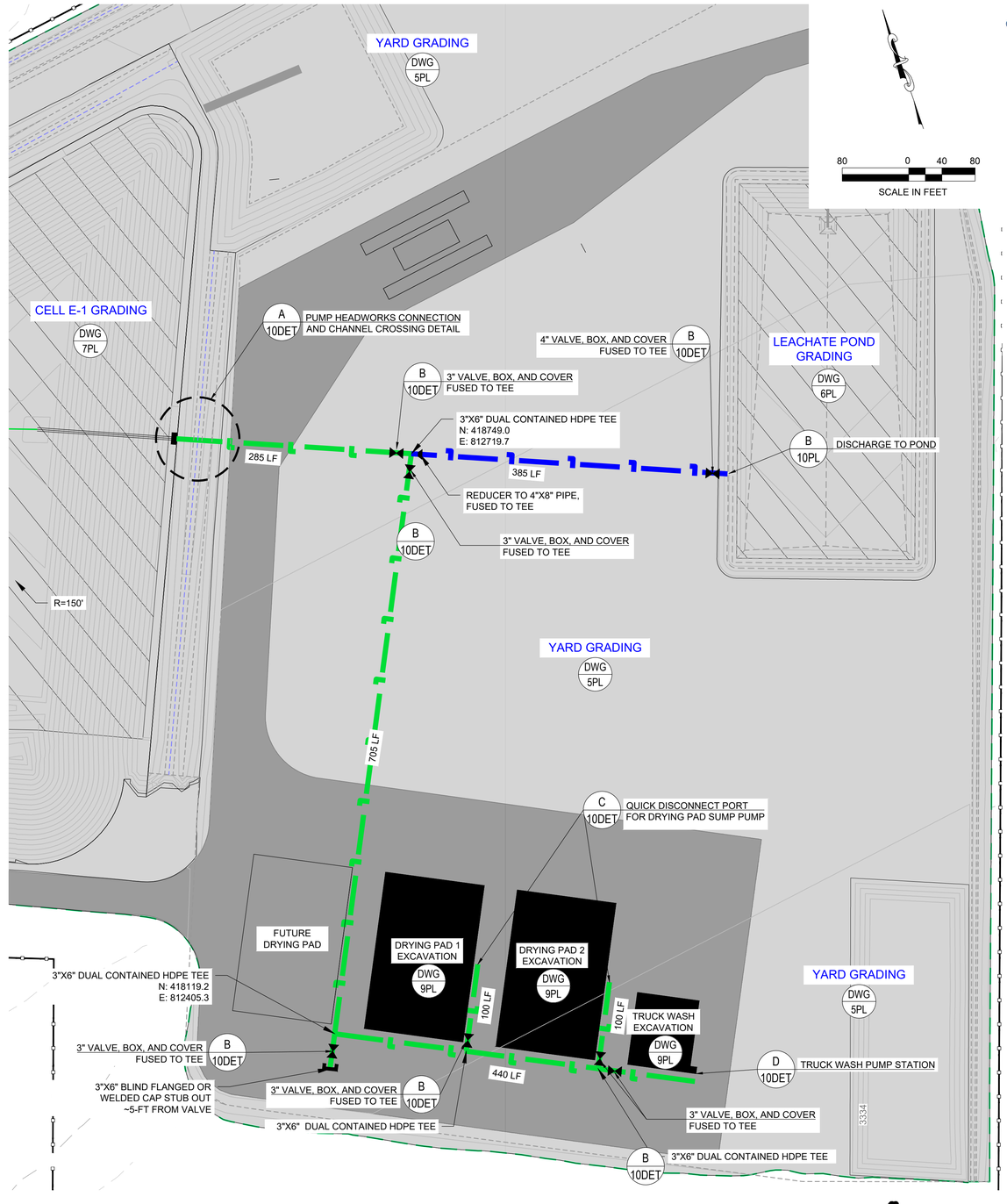
TYPICAL BURIED FORCEMAIN TRENCH AND BEDDING

DETAIL A / 10PL — SCALE: NOT TO SCALE



FORCMAIN DISCHARGE AT LEACHATE EVAPORATION POND DETAIL

DETAIL B / 10PL — SCALE: NOT TO SCALE



ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER 2/16/22

DATE | REVISION | NO.

SHEET TITLE: LEACHATE FORCEMAIN CONSTRUCTION PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

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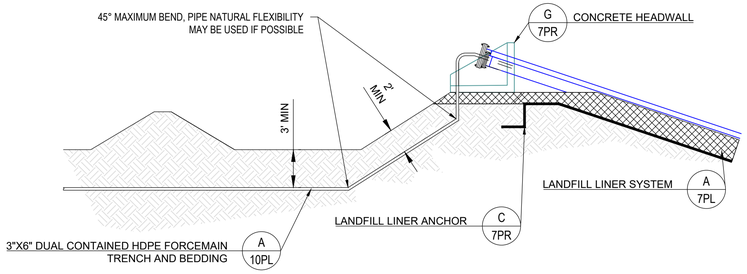
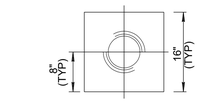
SHEET: 10PL



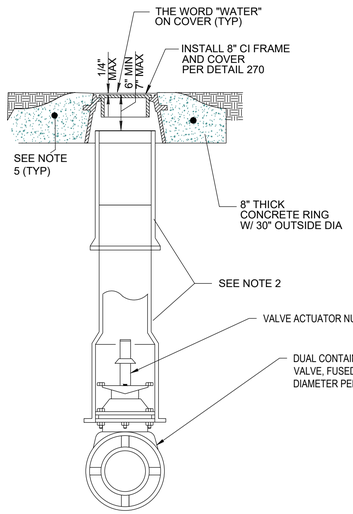
FORCEMAIN CHANNEL CROSSING

DETAIL A 10DET

SCALE: NOT TO SCALE



VIEW A–A



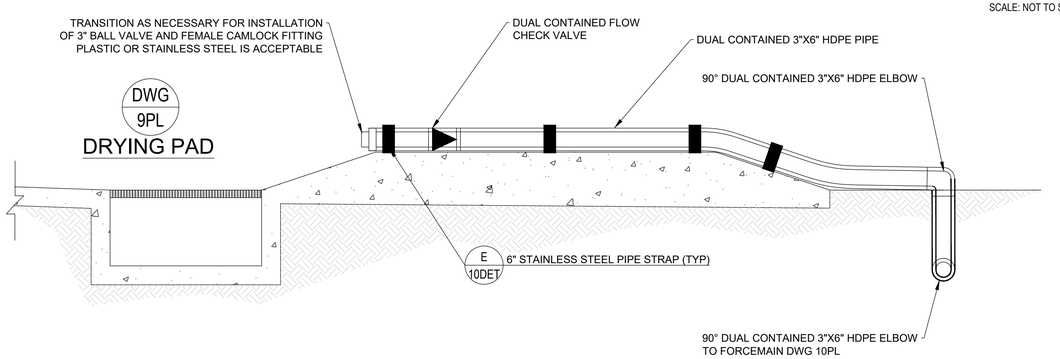
TYPICAL VALVE BOX AND COVER

DETAIL B 10DET

SCALE: NOT TO SCALE

NOTES:

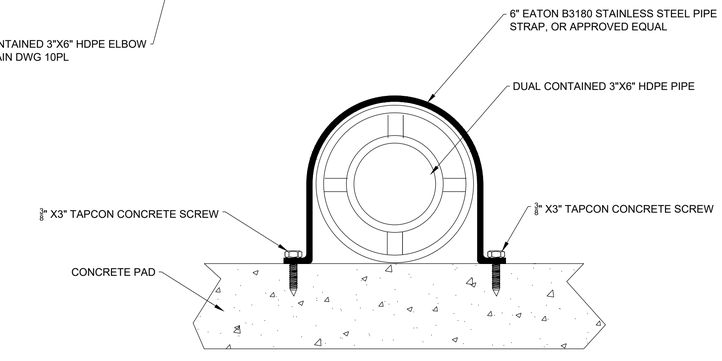
1. VALVE BOX SHALL BE ADJUSTED TO THE FINISHED GRADE PRIOR TO PLACEMENT OF CONCRETE.
2. USE DEEP SKIRTED LID (4" OR MORE) TYPE, SLIDING ADJUSTABLE CAST IRON VALVE BOX C.I. MIN 30,000 P.S.I.
3. GROUND BELOW THE CONCRETE RISER PAD TO BE COMPACTED 95% MAXIMUM DENSITY.
4. CUT RISER PIPE TO LENGTH IN FIELD.
5. #4 REINFORCING STEEL HOOP EQUALLY CENTERED HORIZONTALLY & VERTICALLY.
6. CONCRETE SHALL BE 3000 PSI



DRYING PAD FORCEMAIN CONNECTION PORT

DETAIL C 10DET

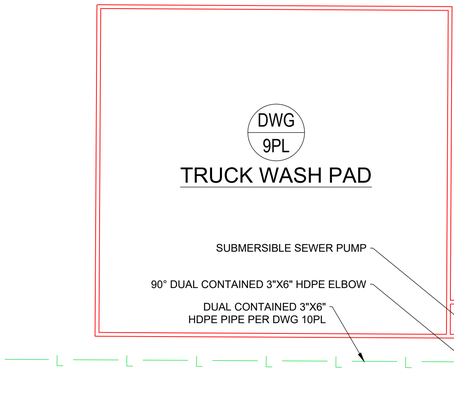
SCALE: NOT TO SCALE

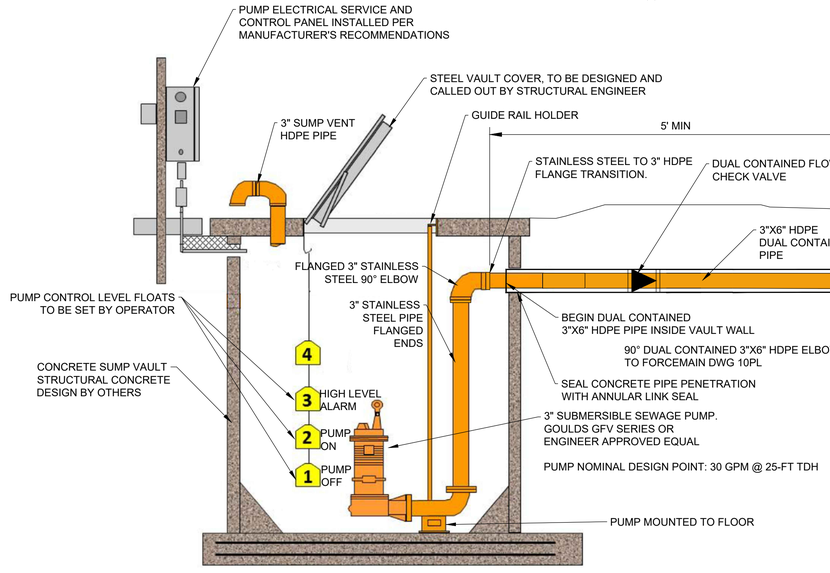


DRYING PAD FORCEMAIN CONNECTION PORT ANCHORING

DETAIL D 10DET

SCALE: NOT TO SCALE





VIEW A-A'

TRUCK WASH UNIT CONCRETE SUMP AND PUMP ASSEMBLY

DETAIL D 10DET

SCALE: NOT TO SCALE

MICHAEL P. BRADFORD
NEW MEXICO
19240
PROFESSIONAL ENGINEER
9/16/22

NO.	REVISION	DATE

SHEET TITLE: LEACHATE FORCEMAIN CONSTRUCTION DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX (562) 427-0805

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD. FILE: F:\ENGINEERS | APP. BY: MPB

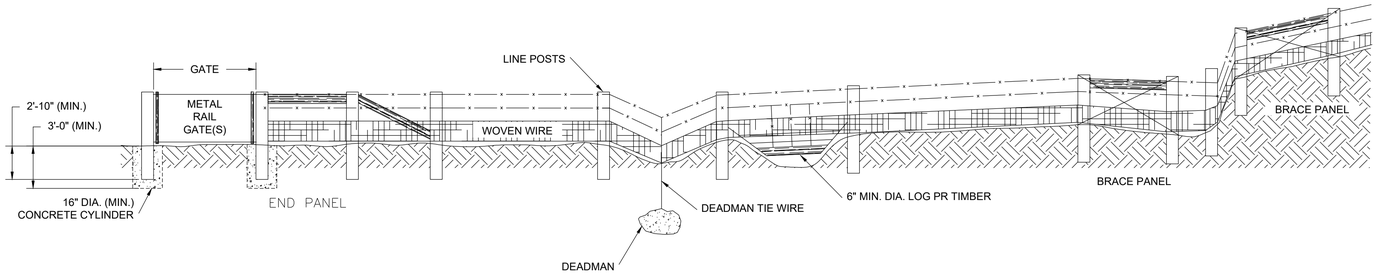
DATE: 02-16-2022

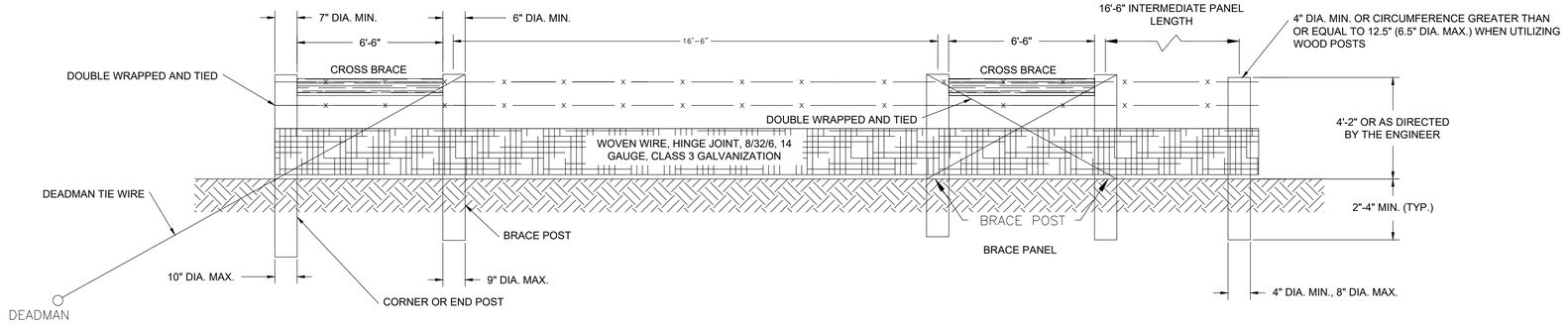
SCALE: AS SHOWN

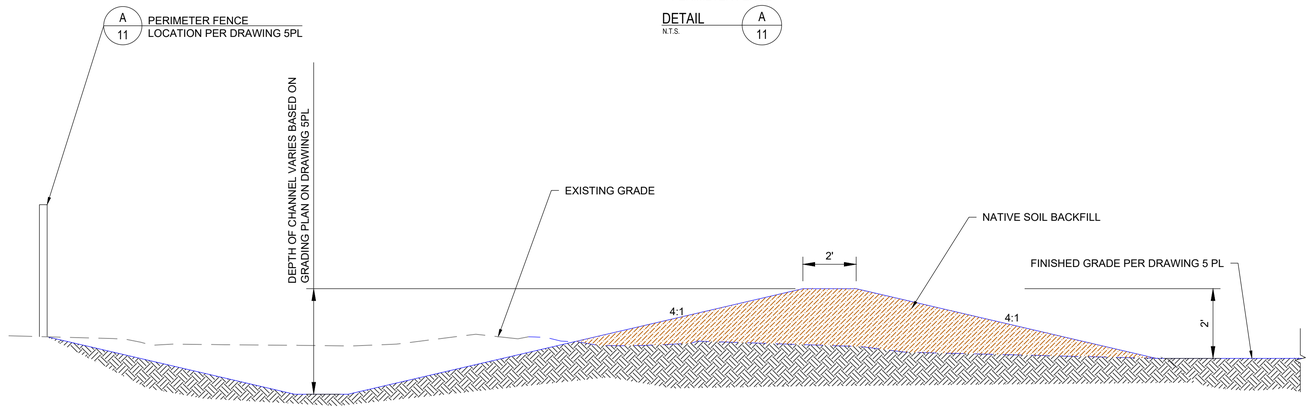
SHEET: 10DET

nm811 Know what's below. Call before you dig.

ISSUED FOR CONSTRUCTION





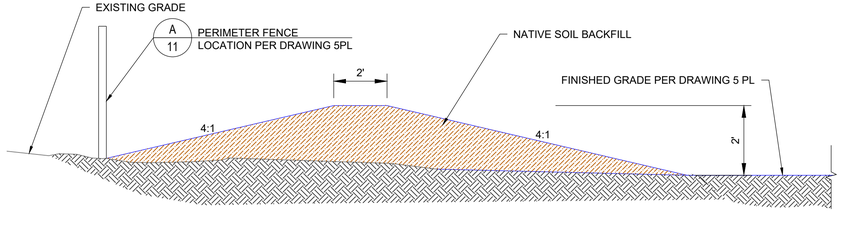


GRAVEL DRIVEWAY PROFILE (TYPICAL)

DETAIL B 11 N.T.S.

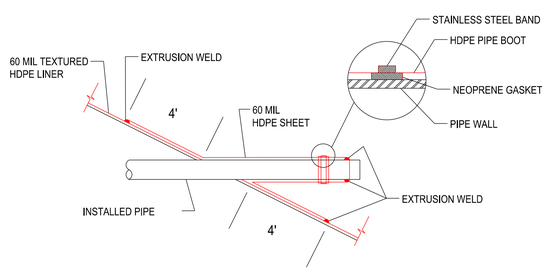
PERIMETER FENCE

DETAIL A 11 N.T.S.



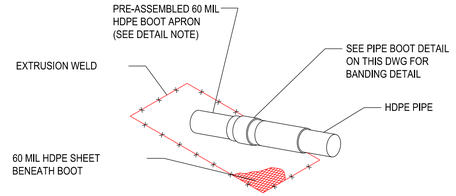
GRAVEL DRIVEWAY PROFILE (TYPICAL)

DETAIL C 11 N.T.S.

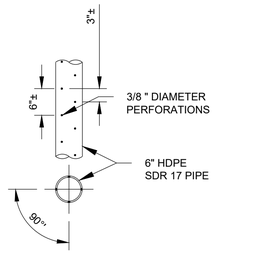


SLOPED SIDE WALL HDPE LINER PIPE BOOT DETAIL – PROFILE VIEW

NOTE:
CONTRACTOR SHALL PROVIDE PRE-ASSEMBLED AND TESTED/ CERTIFIED PIPE BOOTS FOR EACH PIPE PENETRATION AS PER THE SPECIFICATIONS



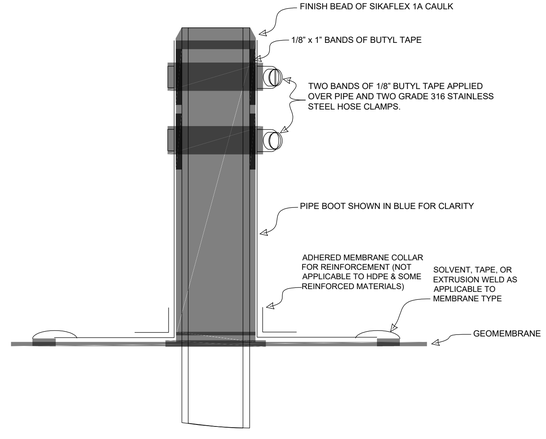
SLOPED SIDE WALL PIPE BOOT DETAIL – ISOMETRIC VIEW



NOTE:
PERFORATIONS BUILT TO MANUFACTURER STANDARD.

PIPE PERFORATIONS

DETAIL E 11 N.T.S.



VERTICAL WALL PIPE BOOT DETAIL – PROFILE VIEW

LINER PIPE BOOT

DETAIL D 11 N.T.S.

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER 2/16/22

NO.	REVISION	DATE

SHEET TITLE: MISCELLANEOUS DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

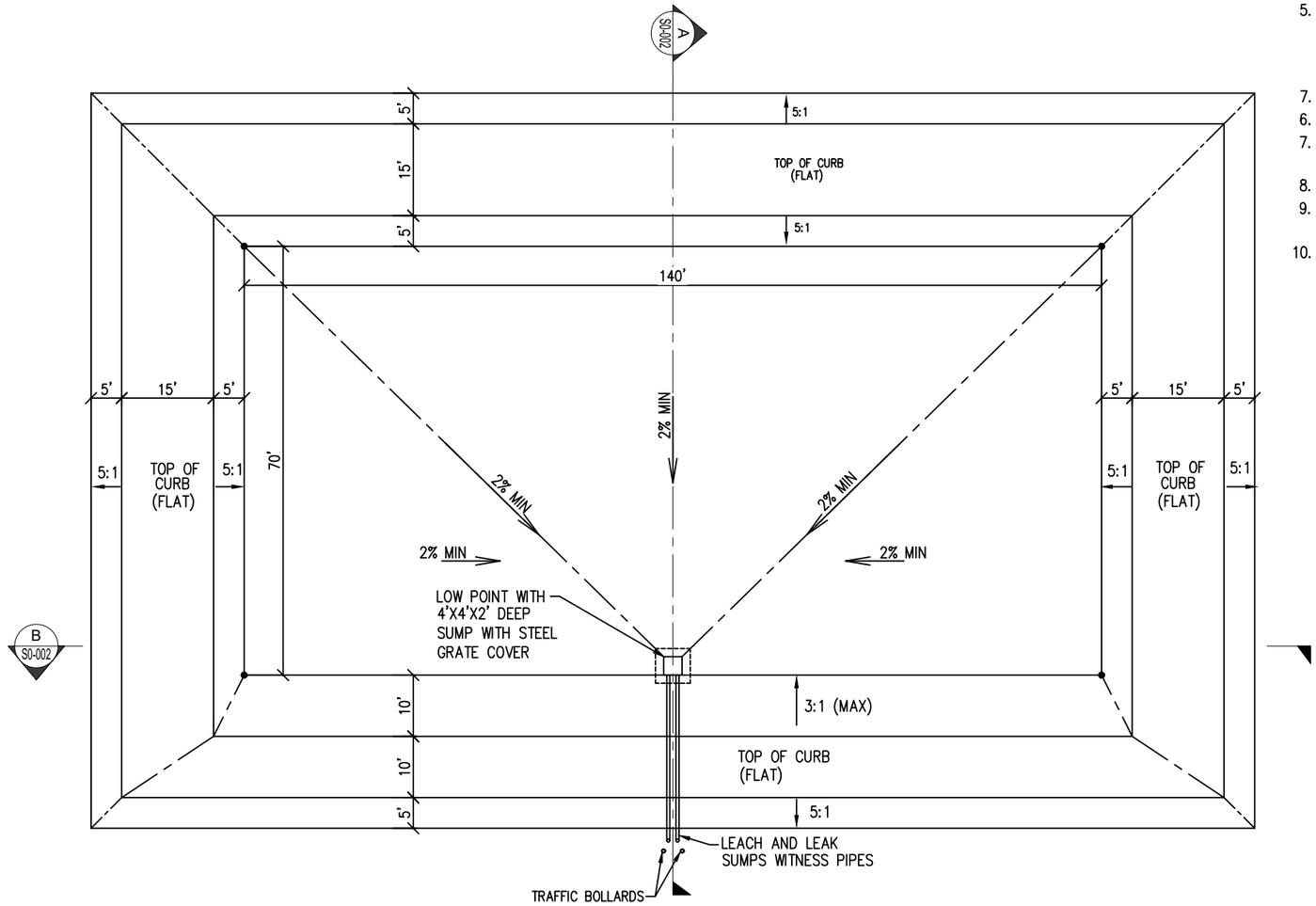
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX. (562) 427-0805

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 11



DRYING PAD FOUNDATION PLAN

(SCALE : NTS)

GENERAL CIVIL & STRUCTURAL NOTES :–

1. ALL DIMENSIONS, ELEVATION AND COORDINATES ARE IN FEET–INCHES UNLESS NOTED OTHERWISE.
2. GRADE OF CONCRETE FOR SHALL BE 4000 PSI.
3. ORDINARY CEMENT USED FOR CONCRETE WORK SHALL BE PORTLAND CEMENT ASTM C150 TYPE I OR II LOW ALKALI.
4. REINFORCING BARS # SHALL BE ASTM 615 DEFORMED GRADE 60.
5. CLEAR COVER TO MAIN REINFORCEMENT
   FOUNDATION BOTTOM..... 3"
   FOUNDATION TOP..... 1 1/2"
   WALL..... 1 1/2"
7. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT LAP LOCATION.
6. DEVELOPMENT LENGTH OF BAR SHALL BE 50xBAR DIA. MINIMUM.
7. SLAB ON GRADE SHALL HAVE CONSTRUCTION JOINTS (SAWED JOINTS) AT THE CONTRACTOR'S OPTION (AS PER ACI318 GUIDE LINES) EITHER THE SAWED OR KEYED CONSTRUCTION JOINTS MAY BE USED. THE KEYED JOINTS SHALL BE USED TO TERMINATE ANY PLACEMENT.
8. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE PRIOR TO CONSTRUCTION.
9. BEFORE POURING CONCRETE ALL EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, SLEEVES, ANGLES, STUDS ETC. SHOULD BE INSPECTED AND SECURELY FIXED AGAINST DISPLACEMENT.
10. DESIGN CRITERIA – FOUNDATION DESIGNED BASED ON 2018 IBC TABLE 1806.2
    PRESUMPTIVE LOAD BEARING VALUES – CLASS OF MATERIAL #3
    A. ALLOWABLE VERTICAL LOAD BEARING PRESSURE = 3000 PSF
    B. ALLOWABLE SETTLEMENT IS CONSIDERED AS 1"

ENGINEERING REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	18–9TW	TRUCK WASH & DRYING PAD EXCAVATION PLAN
2	16–9PL	TRUCK WASH & DRYING PAD EXCAVATION PLAN

CONSTRUCTION REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	S0–002	DRYING PAD : SECTION & DETAILS
2	S0–003	DRYING PAD : REINFORCEMENT DETAILS

RAVI SUDHAKAR VEMULAPALLI
NEW MEXICO
24730
PROFESSIONAL ENGINEER
V. R. Sudhakar
04-11-2022

REFERENCE DRAWINGS

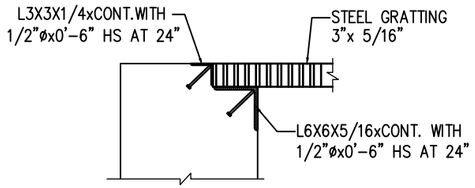
DWG. #	DESCRIPTION

REVISIONS

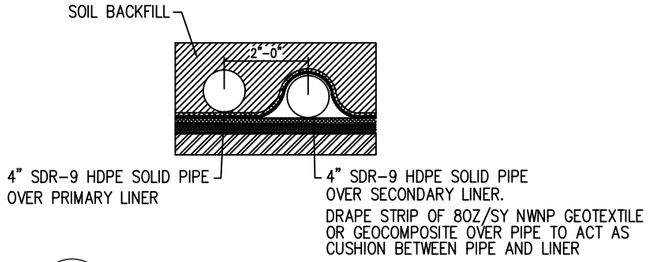
REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04–11–22

HIGH ROLLER EPC

DRAWN BY: FECE	DATE: 02–11–2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	----		
T.H. JOB NO.	21119	DRYING PAD FOUNDATION PLAN	
CLIENT FL. NO.	----		
SCALE.	AS NOTED	SHEET NO. 1 OF 1	S0–001 REV. 0

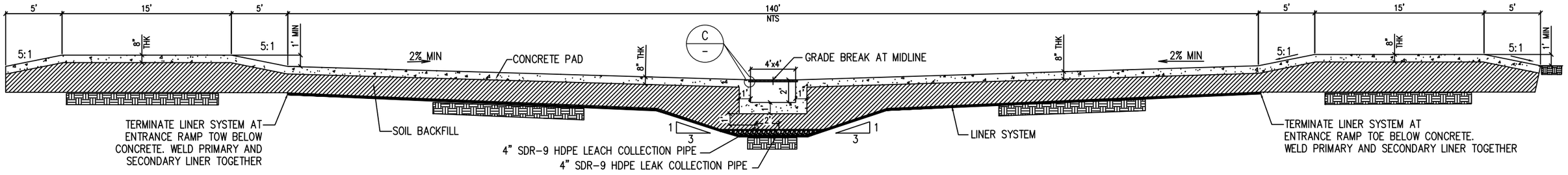


C / - DETAILS OF GRATING
(SCALE: NTS)

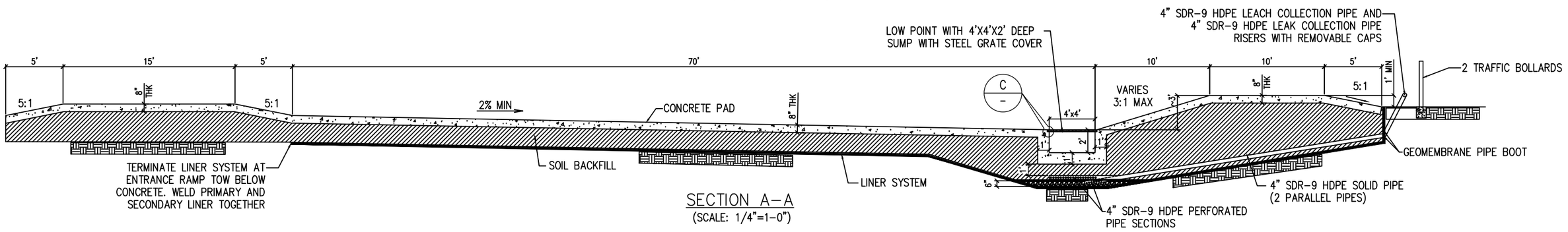


D / - DRYING PAD WITNESS PIPE RISER DETAILS
(SCALE: NTS)

NOTE:
1. ALL CONCRETE OR ROCK-TO-GEOMEMBRANE INTEREFACES MUST BE LINED WITH 8-OZ PER SQUARE YARD NON-WOVEN GEOTEXTILE.
2. FOR ALL OTHER GENERAL NOTES REFER S0-001.



SECTION B-B
(SCALE: 1/4"=1-0")



SECTION A-A
(SCALE: 1/4"=1-0")

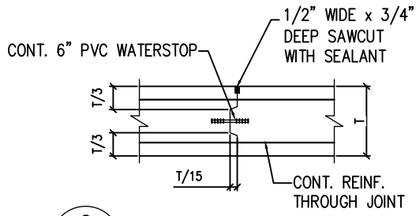
REFERENCE DRAWINGS	
DWG. #	DESCRIPTION

REVISIONS					
REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04-11-22

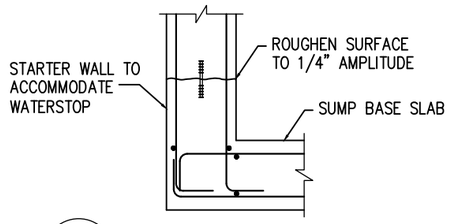
HIGH ROLLER EPC

DRAWN BY: FECE	DATE: 02-11-2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	-----		
T.H. JOB NO.	21119	DRYING PAD SECTION & DETAILS	
CLIENT FL. NO.	-----		
SCALE.	-----	SHEET NO. 1 OF 1	S0-002 / REV. 0

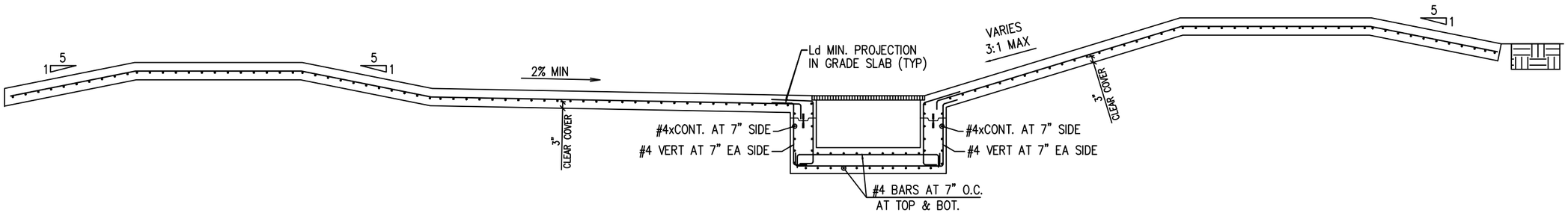
NOTE:
1. FOR ALL GENERAL NOTES REFER S0-001.



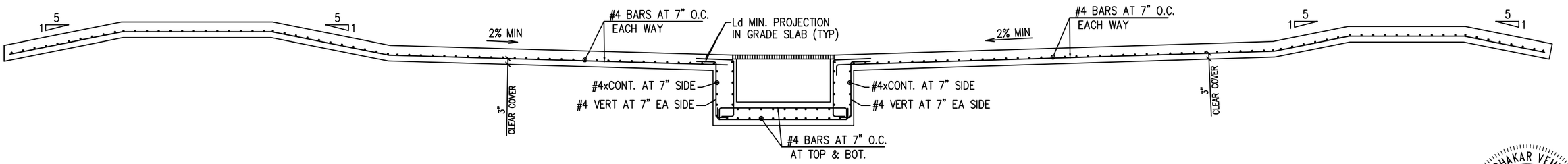
G — DETAILS OF CONSTRUCTION JOINTS IN SLABS
(SCALE: NTS)



H — DETAILS OF JOINT AT SUMP PIT
(SCALE: NTS)



SECTION A-A
SHOWING RENF. DETAILS



SECTION B-B
SHOWING RENF. DETAILS

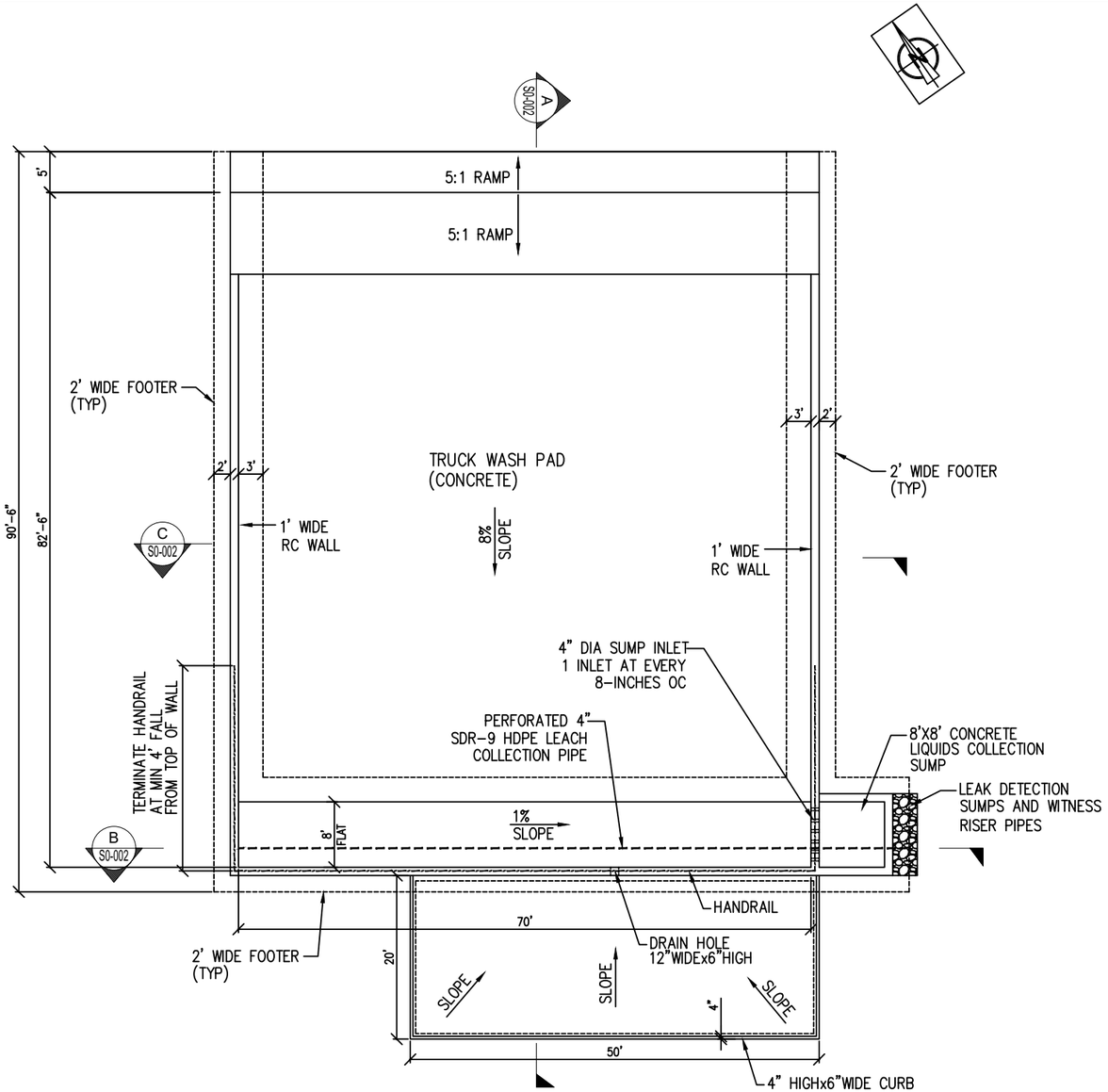
RAVI SUDHAKAR VEMULAPALLI
NEW MEXICO
24730
PROFESSIONAL ENGINEER
V. R. Sudhakar
04-11-2022

REFERENCE DRAWINGS	
DWG. #	DESCRIPTION

REVISIONS					
REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04-11-22

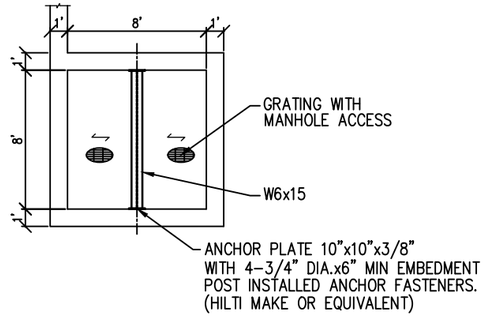
HIGH ROLLER EPC

DRAWN BY: FECE	DATE: 02-11-2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	----		
T.H. JOB NO.	21119	DRYING PAD SECTION & RC DETAILS	
CLIENT FL. NO.	----		
SCALE.	----	SHEET NO. 1 OF 1	S0-003	REV. 0



TRUCK WASH PAD FOUNDATION PLAN

(SCALE : NTS)



PLAN AT TOP OF COLLECTION SUMP

(SCALE : NTS)

GENERAL CIVIL & STRUCTURAL NOTES :–

1. ALL DIMENSIONS, ELEVATION AND COORDINATES ARE IN FEET–INCHES UNLESS NOTED OTHERWISE.
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5. CLEAR COVER TO MAIN REINFORCEMENT
   FOUNDATION BOTTOM..... 3"
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   WALL..... 1 1/2"
7. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT LAP LOCATION.
6. DEVELOPMENT LENGTH OF BAR SHALL BE 50xBAR DIA. MINIMUM.
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    B. ALLOWABLE SETTLEMENT IS CONSIDERED AS 1"

ENGINEERING REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	17–9TW	TRUCK WASH & DRYING PAD EXCAVATION PLAN
2	16–9PL	TRUCK WASH & DRYING PAD EXCAVATION PLAN

CONSTRUCTION REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	S0–002	TRUCK WASH PAD : SECTION & DETAILS
2	S0–003	TRUCK WASH PAD : REINFORCEMENT DETAILS

RAVI SUDHAKAR VEMULAPALLI
NEW MEXICO
24730
PROFESSIONAL ENGINEER
V. R. Sudhakar
04-11-2022

REFERENCE DRAWINGS

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REVISIONS

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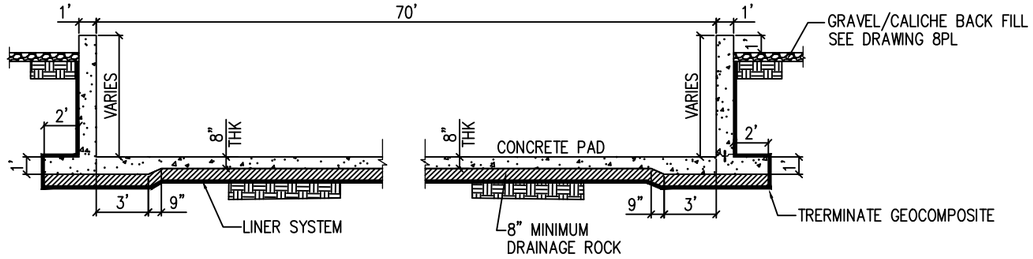
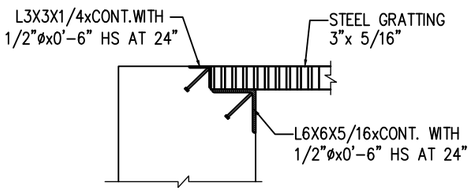
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04–11–22

HIGH ROLLER EPC

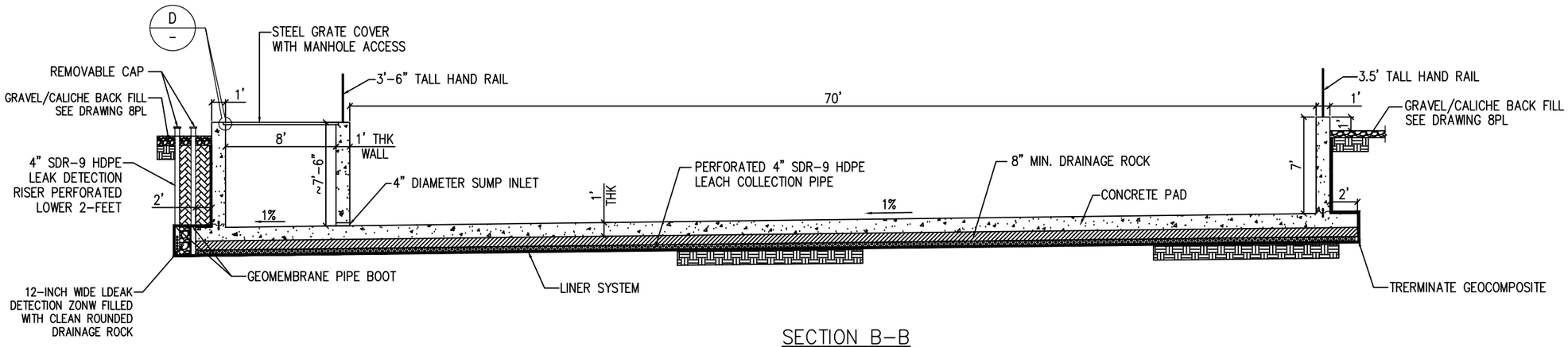
DRAWN BY: FECE	DATE: 02–10–2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	-----		
T.H. JOB NO.	21119	TRUCK WASH PAD FOUNDATION PLAN	
CLIENT FL. NO.	-----		
SCALE.	AS NOTED	SHEET NO. 1 OF 1	S0–001 / REV. 0



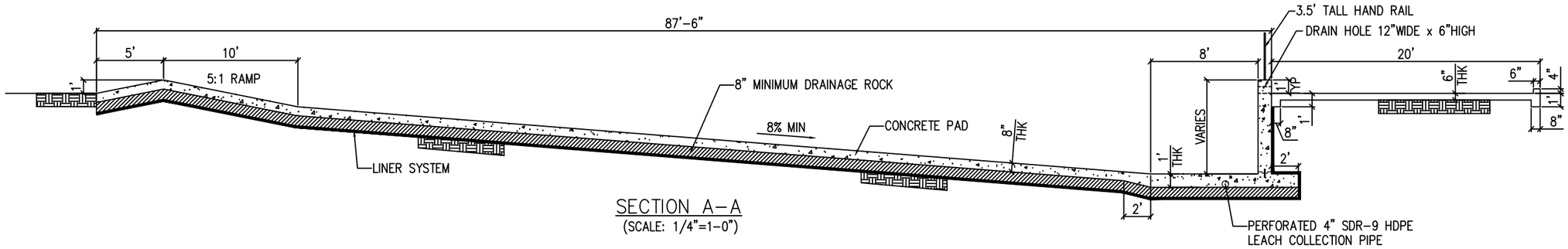
SECTION C–C
(SCALE: 1/4"=1–0")



D
–
DETAILS OF GRATING
(SCALE: NTS)



SECTION B–B
(SCALE: 1/4"=1–0")



SECTION A–A
(SCALE: 1/4"=1–0")

RAVI SUDHAKAR VEMULAPALLI
NEW MEXICO
24730
PROFESSIONAL ENGINEER
V. R. Sudhakar
04-11-2022

NOTE:
1. ALL CONCRETE OR ROCK–TO–GEOMEMBRANE INTEREFACES MUST BE LINED WITH 8–OZ PER SQUARE YARD NON–WOVEN GEOTEXTILE.
2. FOR ALL OTHER GENERAL NOTES REFER S0–001.

REFERENCE DRAWINGS	
DWG. #	DESCRIPTION

REVISIONS					
REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04–11–22

HIGH ROLLER EPC

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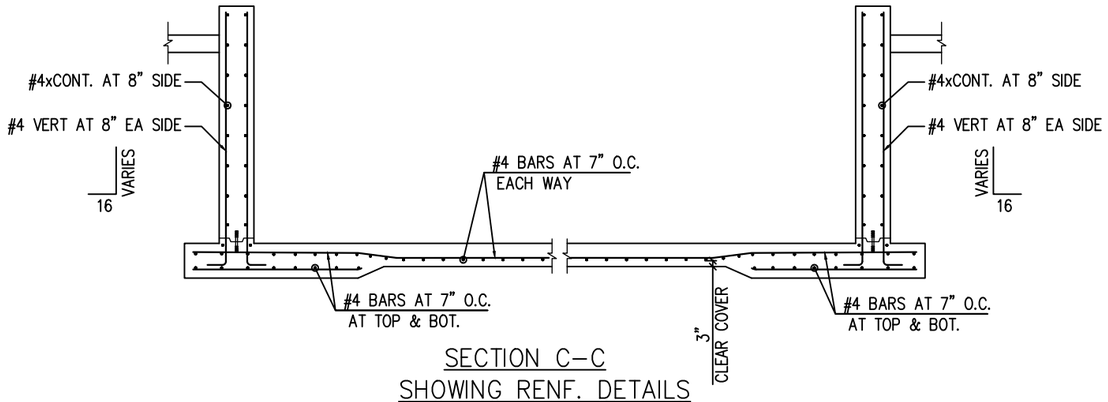
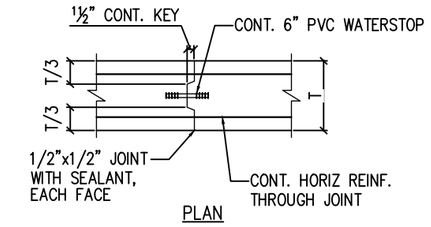
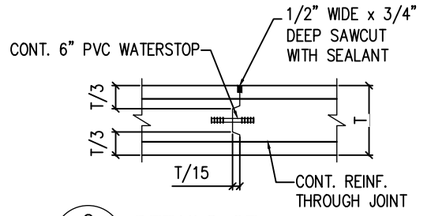
AFE / P.O. NO.	-----		
T.H. JOB NO.	21119	TRUCK WASH PAD SECTION & DETAILS	
CLIENT FL. NO.	-----		
SCALE.	AS NOTED	SHEET NO. 1 OF 1	S0–002 / REV. 0



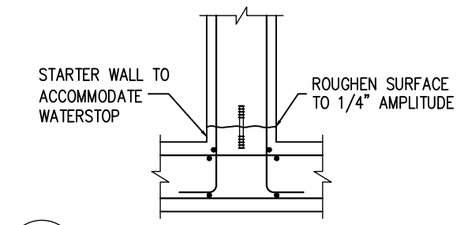
SECTION C–C
SHOWING RENF. DETAILS



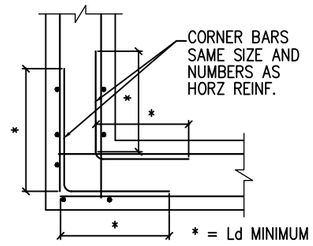
F — DETAILS OF
WALL CONSTRUCTION JOINTS
(SCALE: NTS)



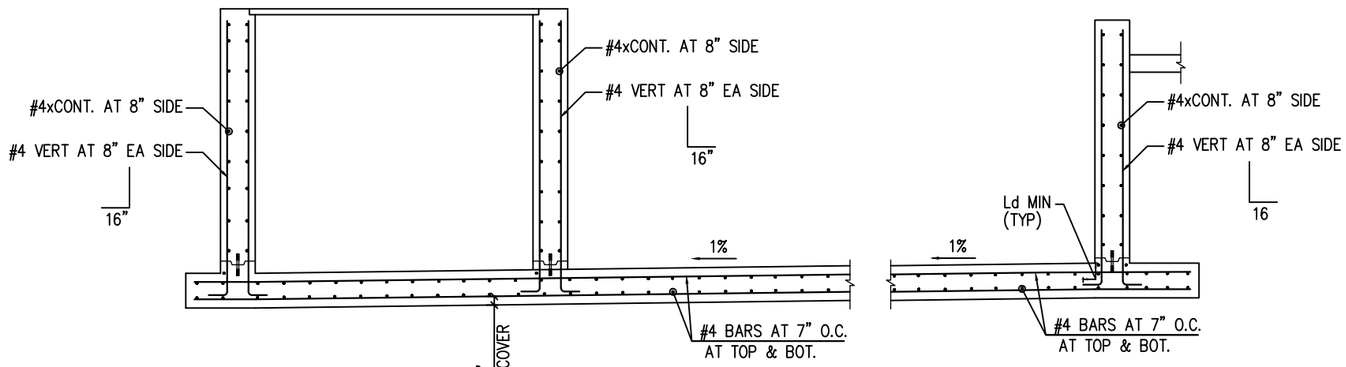
G — DETAILS OF
CONSTRUCTION JOINTS IN SLABS
(SCALE: NTS)



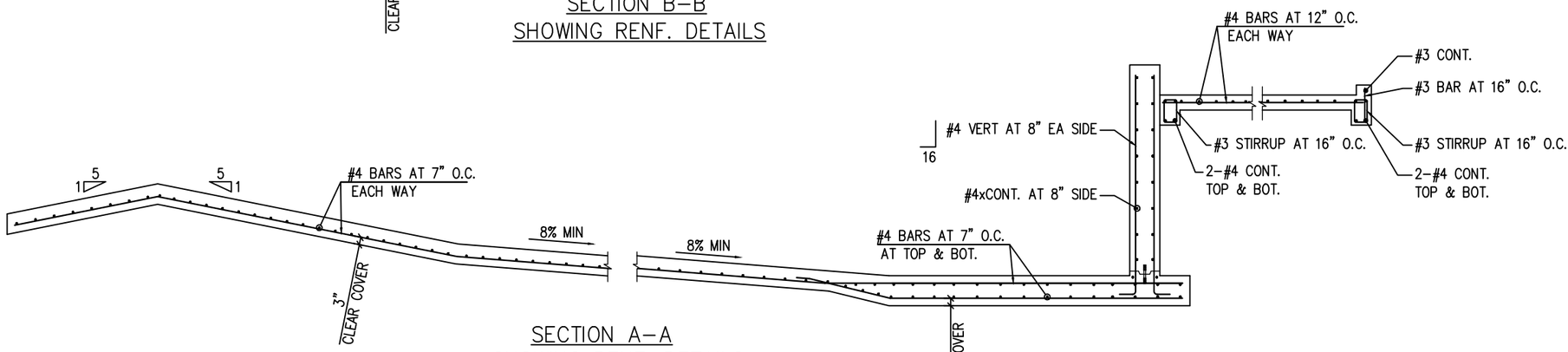
H — DETAILS OF
JOINT AT BASE OF WALLS
(SCALE: NTS)



J — DETAILS OF
CORNER BAR IN WALL
(SCALE: NTS)



SECTION B–B
SHOWING RENF. DETAILS



SECTION A–A
SHOWING RENF. DETAILS

RAVI SUDHAKAR VEMULAPALLI
NEW MEXICO
24730
PROFESSIONAL ENGINEER
V. R. Sudhakar
04-11-2022

NOTE:
1. ALL CONCRETE OR ROCK–TO–GEOMEMBRANE INTEREFACES MUST BE LINED WITH 8–OZ PER SQUARE YARD NON–WOVEN GEOTEXTILE.
2. FOR ALL OTHER GENERAL NOTES REFER S0–001.

REFERENCE DRAWINGS

DWG. #	DESCRIPTION

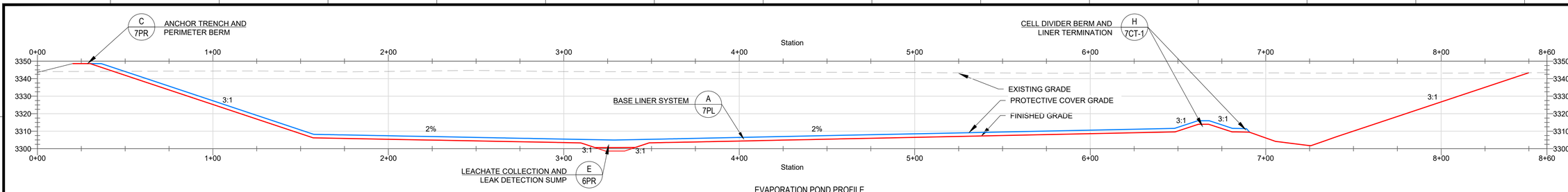
REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04–11–22

HIGH ROLLER EPC

DRAWN BY: FECE	DATE: 02–10–2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	-----		
T.H. JOB NO.	21119	TRUCK WASH PAD REINFORCEMENT DETAIL	
CLIENT FL. NO.	-----		
SCALE.	-----	SHEET NO. 1 OF 1	S0–003 / REV. 0

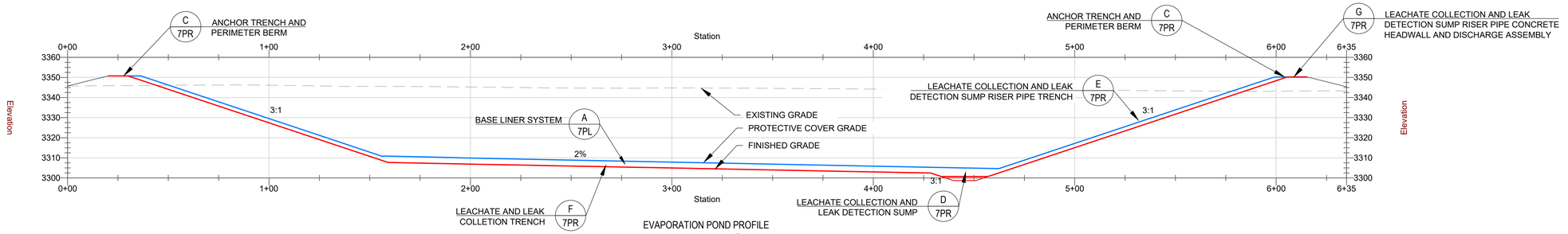
APPENDIX C-2: CONTRACTOR'S RECORD DRAWINGS



EVAPORATION POND PROFILE

DETAIL A 7PR

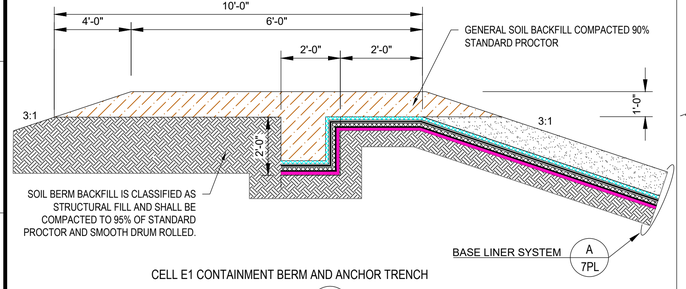
SCALE: 1" = 30'



EVAPORATION POND PROFILE

DETAIL B 7PR

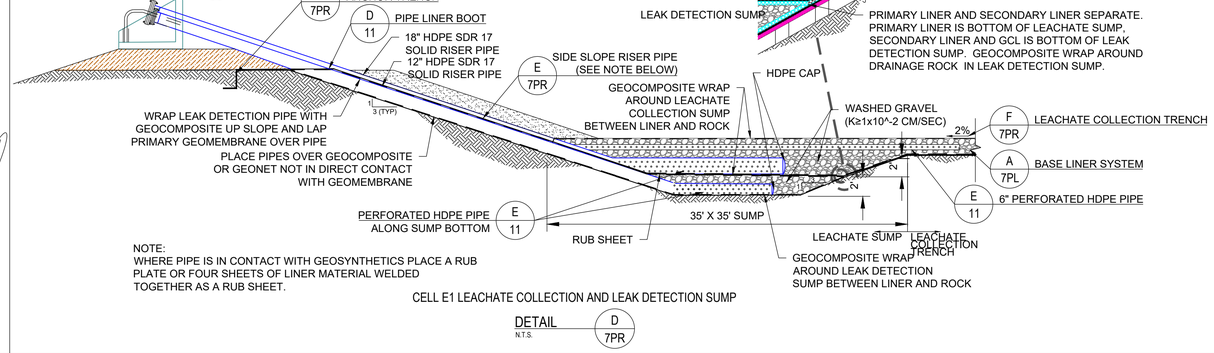
SCALE: 1" = 30'



CELL E1 CONTAINMENT BERM AND ANCHOR TRENCH

DETAIL C 7PR

N.T.S.

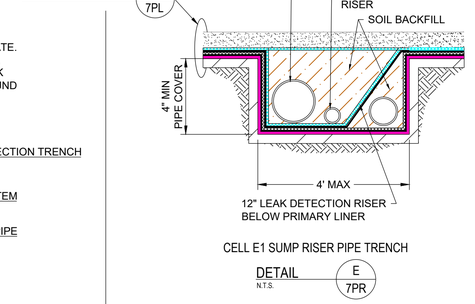


NOTE:
WHERE PIPE IS IN CONTACT WITH GEOSYNTHETICS PLACE A RUB PLATE OR FOUR SHEETS OF LINER MATERIAL WELDED TOGETHER AS A RUB SHEET.

CELL E1 LEACHATE COLLECTION AND LEAK DETECTION SUMP

DETAIL D 7PR

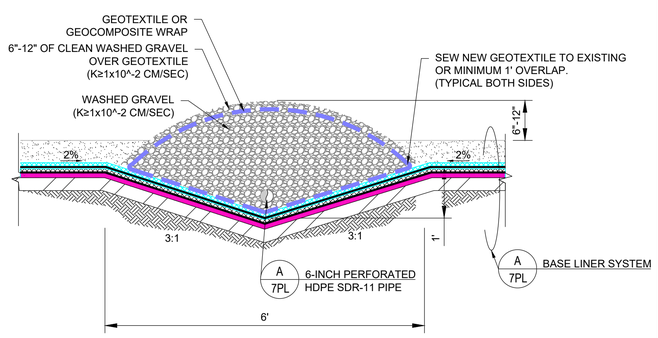
N.T.S.



CELL E1 SUMP RISER PIPE TRENCH

DETAIL E 7PR

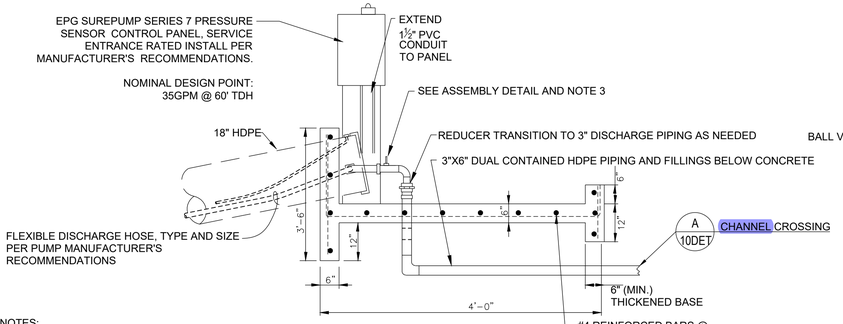
N.T.S.



LEACHATE COLLECTION PIPE AND TRENCH

DETAIL F 7PR

N.T.S.



NOTES:

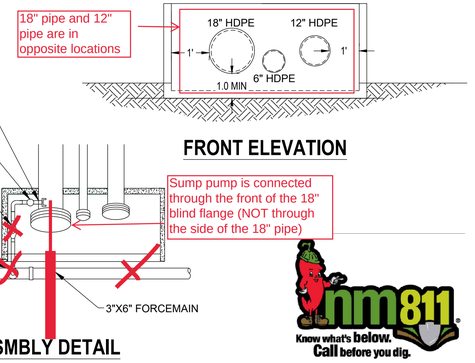
1. ELECTRICAL AND POWER CONNECTIONS TO BE PROVIDED BY OTHERS.
2. CAP ALL RISER PIPE ENDS WITH HDPE FLANGED ADAPTOR WITH D.I. BACKUP RING AND BLIND FLANGE150LB BOLT PATTERN AND STAINLESS STEEL BOLTS AND NUTS.
3. DISCHARGE ASSEMBLY VALVES, FITTINGS AND METERS, TO MATCH DISCHARGE HOSE PIPE DIAMETER PRIOR TO 3" FM REDUCER. ASSEMBLY MATERIALS SHALL BE HDPE OR PE AND BUTT FUSED TOGETHER.

SIDE ELEVATION

LEACHATE PUMP RISER HEADWALL AND DISCHARGE ASSEMBLY

DETAIL G 7PR

N.T.S.



FRONT ELEVATION

ASSMBLY DETAIL

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 2/16/22 PROFESSIONAL ENGINEER

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
6100 MAPLE AVENUE SUITE 118
TEMPE, ARIZONA 85283
(602) 840-2596

DATE | REVISION | NO.

SHEET TITLE: DISPOSAL CELL E-1 GRADING PROFILES AND DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

AGAD FILE: -
APP. BY: MPB
DWN. BY: MPB
CHK. BY: -
PROJ. NO. 01222034.00
DSN. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

SHEET: 7PR

nm811 Know what's below. Call before you dig.

C:\Users\3268mpb\Desktop\WORK\North Ranch\McCloy\CELL E-1\PLANS\007-CELL E1 GRADING PLAN.dwg Feb 17, 2022 - 4:2pm By: 3268mpb

EXISTING FEATURES LEGEND:

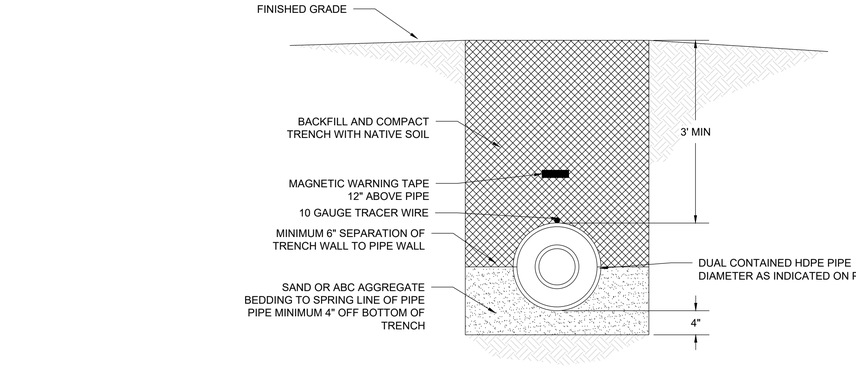
- EXISTING GRADE CONTOURS (2' CONTOURS)
- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINES / GAS EASEMENT
- EXISTING HIGHWAY CENTERLINE
- EXISTING NMOCD PERMITTED OIL WELLS

PROPOSED FEATURES LEGEND:

- 1-FT GRADING CONTOURS (CONTROL INFORMATION ON THIS SHEET)
- 2-FT GRADING CONTOURS (CONTROL INFORMATION ON OTHER SHEET AS INDICATED)
- FACILITY PERMIT BOUNDARY
- PERMIT BOUNDARY CORNERS (N: E:)
- PERMITTED WASTE DISPOSAL/PHASE BOUNDARY
- WASTE DISPOSAL CELL BOUNDARY
- 3-STRAND BARBED WIRE FENCE (A / 11)
- PROJECT LIMITS/MASS EXCAVATION AREA (APPROXIMATE)
- GRADING AREA OTHER SHEETS
- CALICHE/GRAVEL ROADWAY (A / 8PL)
- GEOSYNTHETIC LINED AREA
- CONCRETE PADS
- GRADING BREAK LINE
- TRAFFIC LANE CENTER LINE
- 3"X6" DUAL CONTAINED HDPE LEACHATE FORCEMAIN (APPROX LF AS SHOWN)
- 4"X8" DUAL CONTAINED HDPE LEACHATE FORCEMAIN (APPROX LF AS SHOWN) (A / 10PL)
- DUAL CONTAINED HDPE REDUCER
- DUAL CONTAINED HDPE VALVE
- STUB

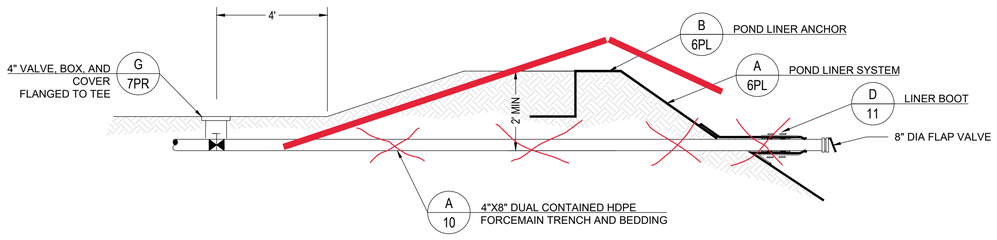
NOTES:

1. CONTRACTOR SHALL MAINTAIN A MINIMUM OFFSET OF 5-FEET FROM CONCRETE FOOTERS WITH FORCMAIN FLOWLINE.
2. FORCEMAIN ALIGNMENT SHOW IS SPECIFICALLY FOR IF THE PIPE IS BURIED DURING THIS PROJECT. PIPE WHEN BURIED MUST BE PLACED AS DETAILED TO PREVENT UNINTENTIONAL BURIAL DURING CELL CLOSURES. IF PIPE IS PLACED AT GRADE, OPERATIONS MAY ALIGN THE PIPE AS DESIRED.



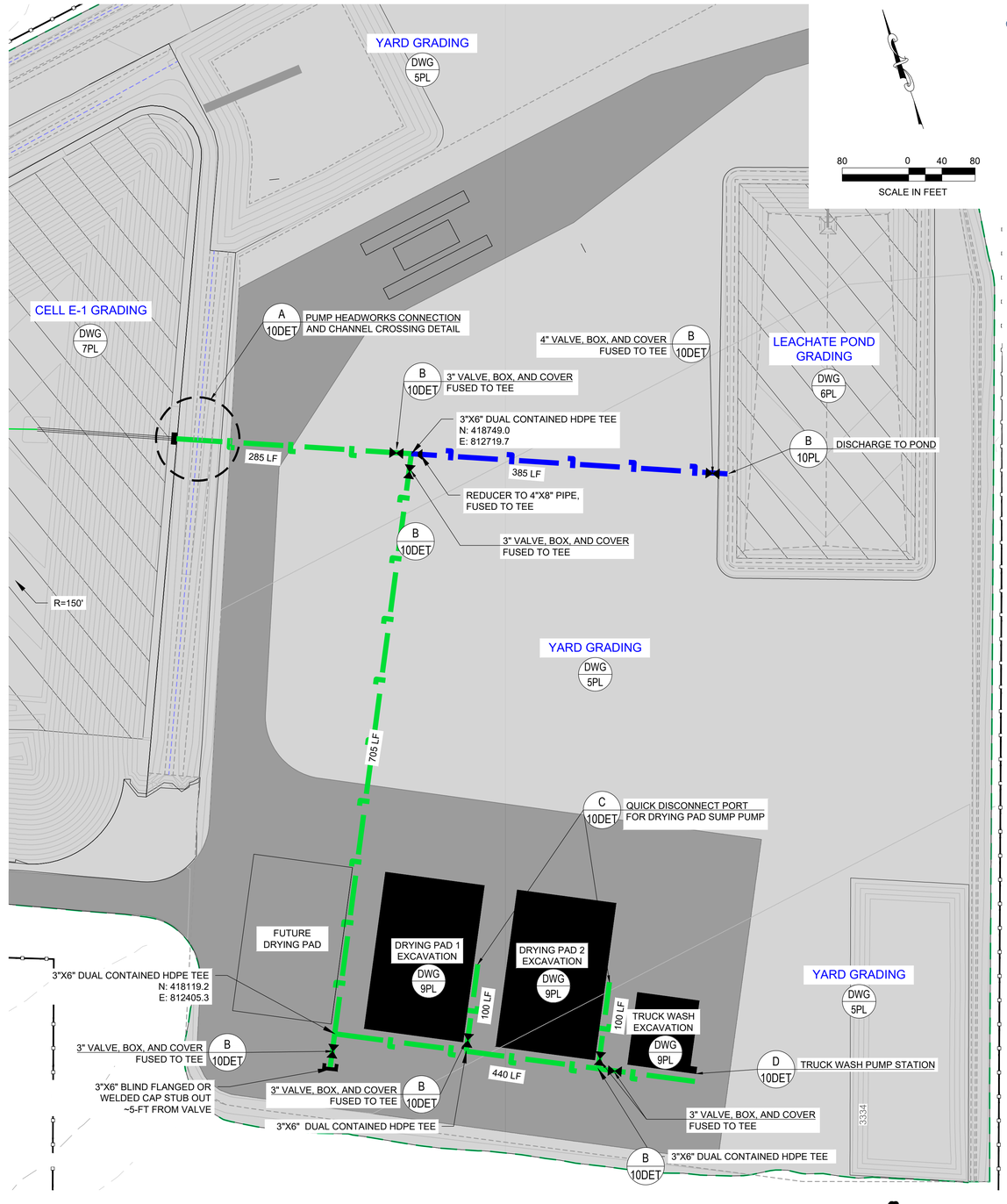
TYPICAL BURIED FORCEMAIN TRENCH AND BEDDING

DETAIL A/10PL — SCALE: NOT TO SCALE



FORCMAIN DISCHARGE AT LEACHATE EVAPORATION POND DETAIL

DETAIL B/10PL — SCALE: NOT TO SCALE



ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD NEW MEXICO 19240 PROFESSIONAL ENGINEER 2/16/22

NO.	REVISION	DATE

SHEET TITLE: LEACHATE FORCEMAIN CONSTRUCTION PLAN

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

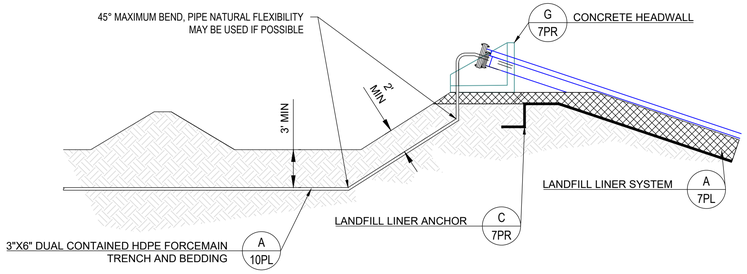
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX. (562) 427-0805

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

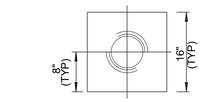
SCALE: AS SHOWN

SHEET: 10PL

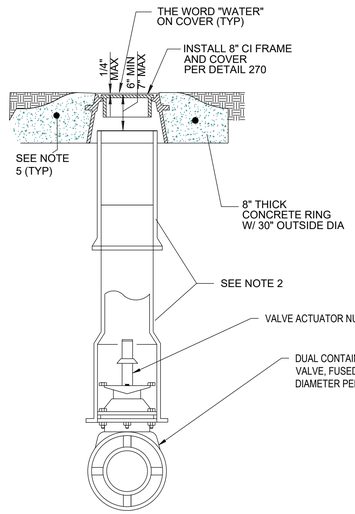


FORCEMAIN CHANNEL CROSSING

DETAIL A — SCALE: NOT TO SCALE — 10DET



VIEW A–A

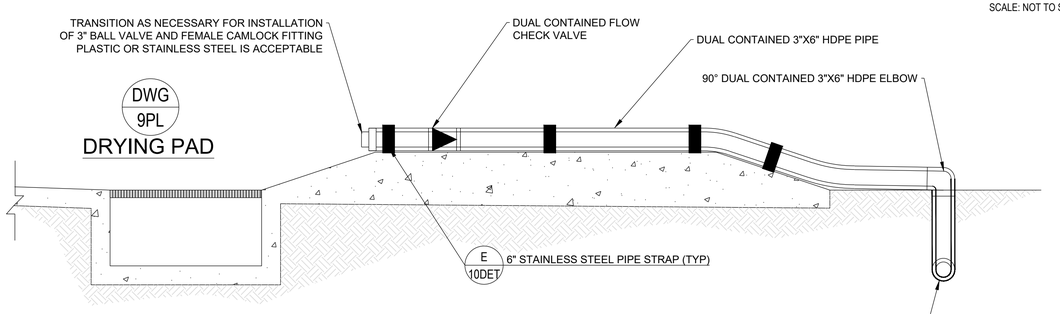


TYPICAL VALVE BOX AND COVER

DETAIL B — SCALE: NOT TO SCALE — 10DET

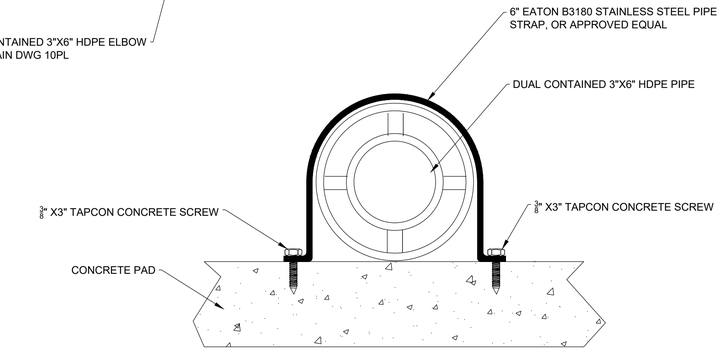
NOTES:

1. VALVE BOX SHALL BE ADJUSTED TO THE FINISHED GRADE PRIOR TO PLACEMENT OF CONCRETE.
2. USE DEEP SKIRTED LID (4" OR MORE) TYPE, SLIDING ADJUSTABLE CAST IRON VALVE BOX C.I. MIN 30,000 P.S.I.
3. GROUND BELOW THE CONCRETE RISER PAD TO BE COMPACTED 95% MAXIMUM DENSITY.
4. CUT RISER PIPE TO LENGTH IN FIELD.
5. #4 REINFORCING STEEL HOOP EQUALLY CENTERED HORIZONTALLY & VERTICALLY.
6. CONCRETE SHALL BE 3000 PSI



DRYING PAD FORCEMAIN CONNECTION PORT

DETAIL C — SCALE: NOT TO SCALE — 10DET

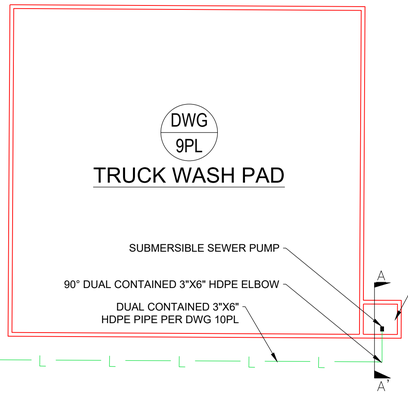


DRYING PAD FORCEMAIN CONNECTION PORT ANCHORING

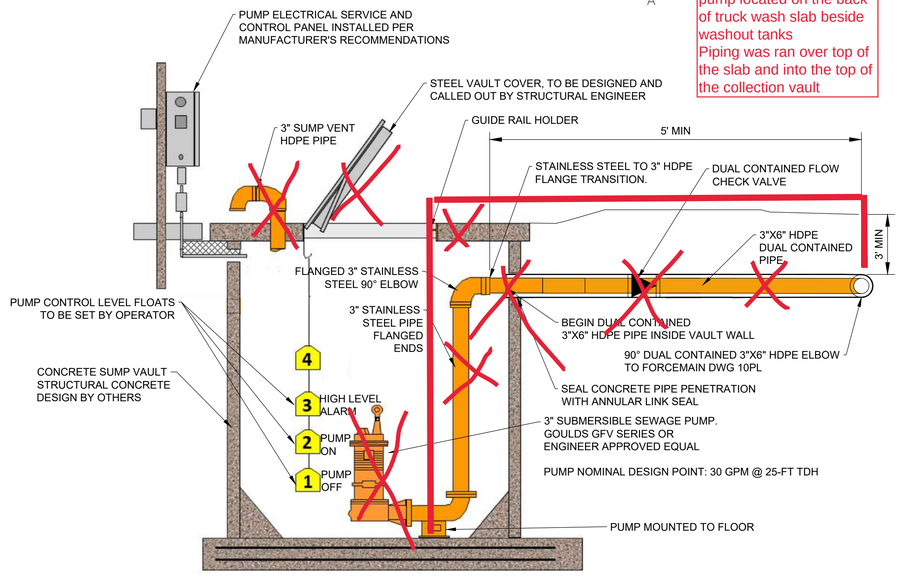
DETAIL D — SCALE: NOT TO SCALE — 10DET

DWG 9PL

TRUCK WASH PAD



Sump Pump replaced with pump located on the back of truck wash slab beside washout tanks
Piping was ran over top of the slab and into the top of the collection vault



VIEW A-A'

TRUCK WASH UNIT CONCRETE SUMP AND PUMP ASSEMBLY

DETAIL D — SCALE: NOT TO SCALE — 10DET

ISSUED FOR CONSTRUCTION

MICHAEL P. BRADFORD — NEW MEXICO — 19240 — 2/16/22 — PROFESSIONAL ENGINEER

NO.	REVISION	DATE

SHEET TITLE: LEACHATE FORCEMAIN CONSTRUCTION DETAILS

PROJECT TITLE: CELL E-1 AND OPERATIONAL INFRASTRUCTURE CONSTRUCTION PLANS NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY LEA COUNTY, NEW MEXICO

CLIENT: HIGH ROLLER EPC

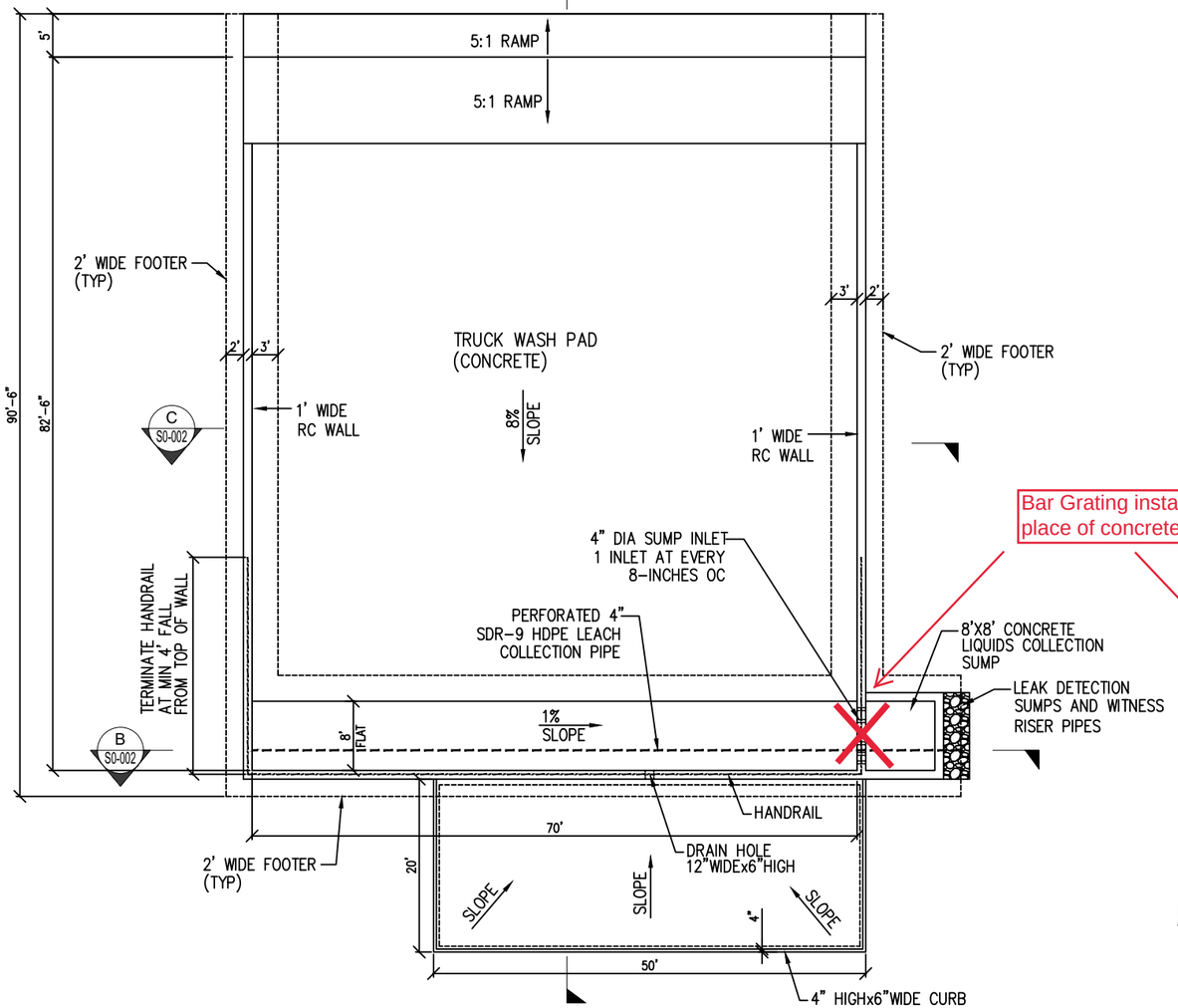
SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
8799 BALBOA AVENUE, SUITE 290
SAN DIEGO, CA 92123
(858) 571-5500 FAX (562) 427-0805

PROJ. NO. 01222034.00 | DSN. BY: MPB | DWN. BY: MPB | CHK. BY: - | ACAD. FILE: F:\ENGINEERS | APP. BY: MPB

DATE: 02-16-2022

SCALE: AS SHOWN

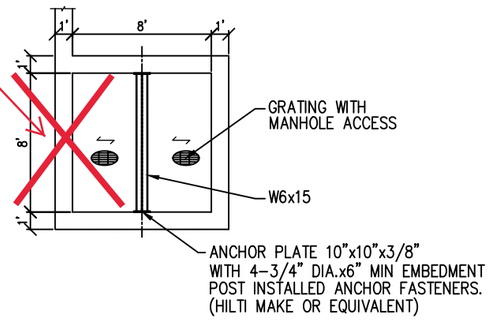
SHEET: 10DET



TRUCK WASH PAD FOUNDATION PLAN

(SCALE : NTS)

Bar Grating installed in place of concrete wall



PLAN AT TOP OF COLLECTION SUMP

(SCALE : NTS)

GENERAL CIVIL & STRUCTURAL NOTES :–

1. ALL DIMENSIONS, ELEVATION AND COORDINATES ARE IN FEET–INCHES UNLESS NOTED OTHERWISE.
2. GRADE OF CONCRETE FOR SHALL BE 4000 PSI.
3. ORDINARY CEMENT USED FOR CONCRETE WORK SHALL BE PORTLAND CEMENT ASTM C150 TYPE I OR II LOW ALKALI.
4. REINFORCING BARS # SHALL BE ASTM 615 DEFORMED GRADE 60.
5. CLEAR COVER TO MAIN REINFORCEMENT
   FOUNDATION BOTTOM..... 3"
   FOUNDATION TOP..... 1 1/2"
   WALL..... 1 1/2"
7. NOT MORE THAN 50% OF BARS SHALL BE LAPPED AT LAP LOCATION.
6. DEVELOPMENT LENGTH OF BAR SHALL BE 50xBAR DIA. MINIMUM.
7. SLAB ON GRADE SHALL HAVE CONSTRUCTION JOINTS (SAWED JOINTS) AT THE CONTRACTOR'S OPTION (AS PER ACI318 GUIDE LINES) EITHER THE SAWED OR KEYED CONSTRUCTION JOINTS MAY BE USED. THE KEYED JOINTS SHALL BE USED TO TERMINATE ANY PLACEMENT.
8. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE PRIOR TO CONSTRUCTION.
9. BEFORE POURING CONCRETE ALL EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, SLEEVES, ANGLES, STUDS ETC. SHOULD BE INSPECTED AND SECURELY FIXED AGAINST DISPLACEMENT.
10. DESIGN CRITERIA – FOUNDATION DESIGNED BASED ON 2018 IBC TABLE 1806.2
    PRESUMPTIVE LOAD BEARING VALUES – CLASS OF MATERIAL #3
    A. ALLOWABLE VERTICAL LOAD BEARING PRESSURE = 3000 PSF
    B. ALLOWABLE SETTLEMENT IS CONSIDERED AS 1"

ENGINEERING REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	17–9TW	TRUCK WASH & DRYING PAD EXCAVATION PLAN
2	16–9PL	TRUCK WASH & DRYING PAD EXCAVATION PLAN

CONSTRUCTION REFERENCES :

SR. NO.	DRAWING #	DESCRIPTION
1	S0–002	TRUCK WASH PAD : SECTION & DETAILS
2	S0–003	TRUCK WASH PAD : REINFORCEMENT DETAILS

REFERENCE DRAWINGS

DWG. #	DESCRIPTION

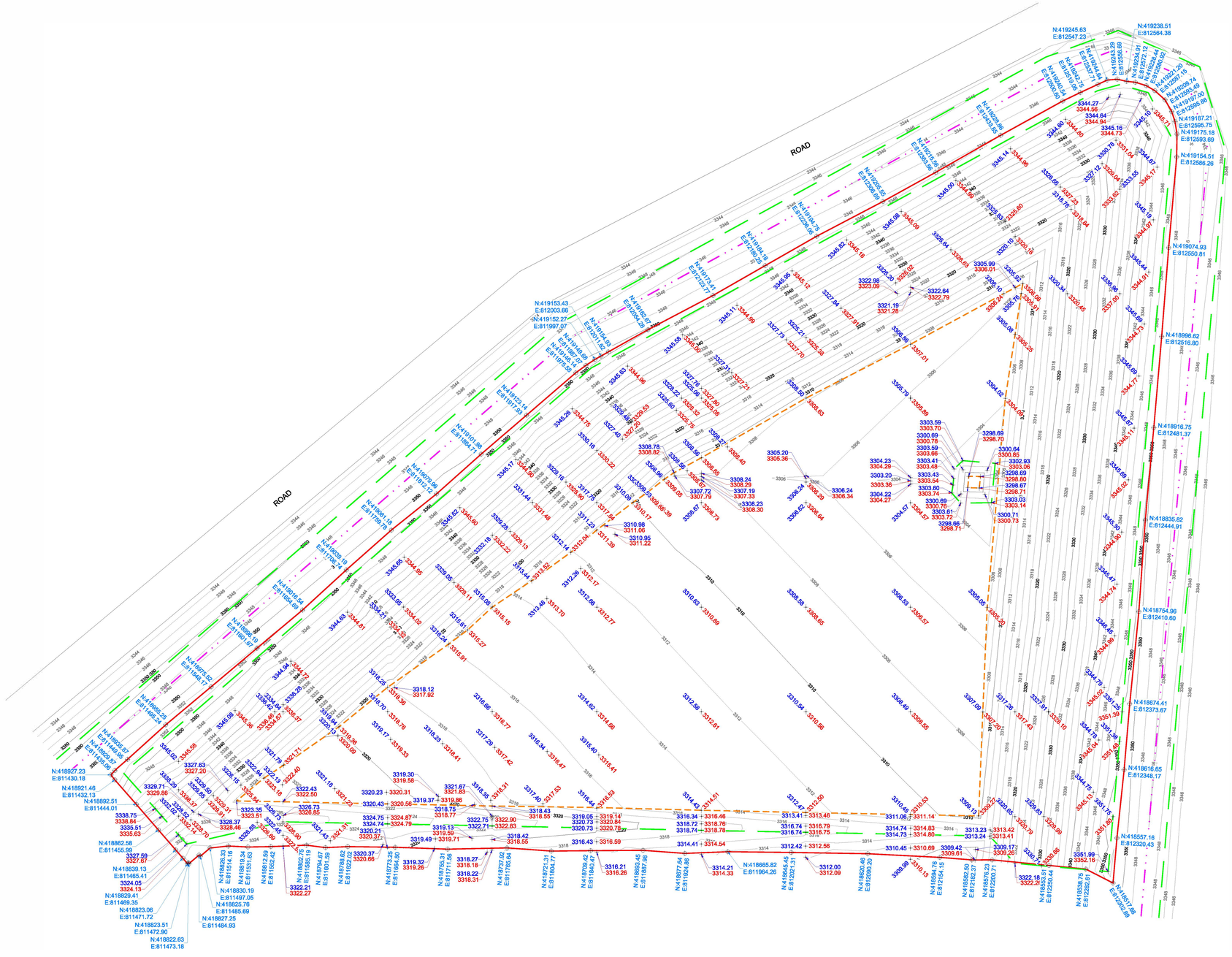
REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
0	ISSUED FOR CONSTRUCTION	AW	RV	–	04–11–22

HIGH ROLLER EPC

DRAWN BY: FECE	DATE: 02–10–2022	NORTH RANCH LANDFILL	
AFE / P.O. NO.	-----		
T.H. JOB NO.	21119	TRUCK WASH PAD FOUNDATION PLAN	
CLIENT FL. NO.	-----		
SCALE.	AS NOTED	SHEET NO. 1 OF 1	S0–001 / REV. 0

APPENDIX C-3:
AS-BUILT
SUBGRADE AND
PROTECTIVE
COVER
SURVEYS



NOTES:

1. BEARINGS, DISTANCES, AREA AND COORDINATES SHOWN HEREON ARE CORRELATED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM OF 1983, EAST ZONE, AS DETERMINED BY GPS OPUS OBSERVATIONS. ALL BEARINGS AND DISTANCES SHOWN ARE GRID.
2. LATITUDE & LONGITUDE ARE NAD 83 DECIMAL GEOGRAPHIC.
3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT AND THE REVIEW OF THE ABSTRACT OF TITLE. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREON. LOCATION OF ALL IMPROVEMENTS WAS BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAS BEEN SPECIFICALLY OMITTED. VESTING DOCUMENTS NOT FURNISHED FOR THIS SURVEY.

CHARLES L. JURICA
NEW MEXICO
25490
PROFESSIONAL SURVEYOR

I, CHARLES L. JURICA, A NEW MEXICO PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

07/ 3/2022
CHARLES L. JURICA NEW MEXICO PS #25490 DATE

50' 0' 50' 100'
SCALE: 1" = 50'

LEGEND

	EDGE OF LINER
3342	AS-BUILT GRADE CONTOUR - 2'
3340	AS-BUILT GRADE CONTOUR - 10'
3334.90	SUBGRADE DESIGN ELEVATION
3334.92	SUBGRADE AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE
	CHANNEL FLOWLINE
N:418916.75 E:812481.37	EDGE OF LINER COORDINATES

TRANSGLOBAL SERVICES LLC
TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK

PROJECT NO. 8412

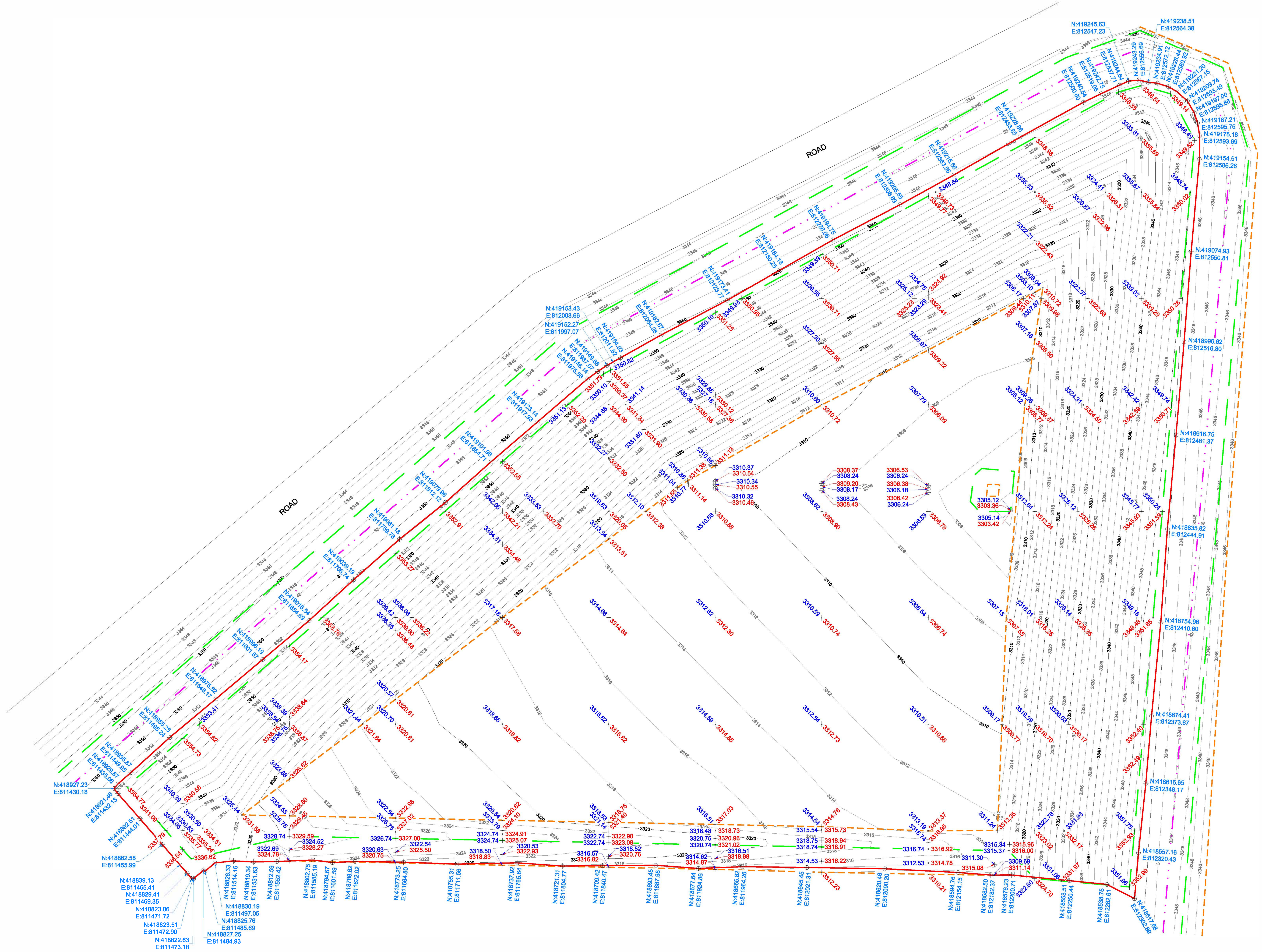
HIGH ROLLER EPC

NORTH RANCH LANDFILL

CELL E-1 SUBGRADE AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL_CELL E-1 SUBGRADE	REV. 0
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=50'	PAGE 1 OF 1		



NOTES:

1. BEARINGS, DISTANCES, AREA AND COORDINATES SHOWN HEREON ARE CORRELATED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM OF 1983, EAST ZONE, AS DETERMINED BY GPS OPUS OBSERVATIONS. ALL BEARINGS AND DISTANCES SHOWN ARE GRID.
2. LATITUDE & LONGITUDE ARE NAD 83 DECIMAL GEOGRAPHIC.
3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT AND THE REVIEW OF THE ABSTRACT OF TITLE. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREON. LOCATION OF ALL IMPROVEMENTS WAS BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAS BEEN SPECIFICALLY OMITTED. VESTING DOCUMENTS NOT FURNISHED FOR THIS SURVEY.

CHARLES L. JURICA
NEW MEXICO
25490
PROFESSIONAL SURVEYOR

I, CHARLES L. JURICA, A NEW MEXICO PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

07/13/2022

CHARLES L. JURICA   NEW MEXICO PS #25490   DATE

50' 0' 50' 100'

SCALE: 1" = 50'

LEGEND

Symbol	Description
	EDGE OF LINER
3342	AS-BUILT GRADE CONTOUR - 2'
3340	AS-BUILT GRADE CONTOUR - 10'
+ 3334.90	PROTECTIVE COVER DESIGN ELEVATION
+ 3334.92	PROTECTIVE COVER AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE
	CHANNEL FLOWLINE
N:418916.75 E:812481.37	EDGE OF LINER COORDINATES

TRANSGLOBAL SERVICES LLC

TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK

PROJECT NO. 8412

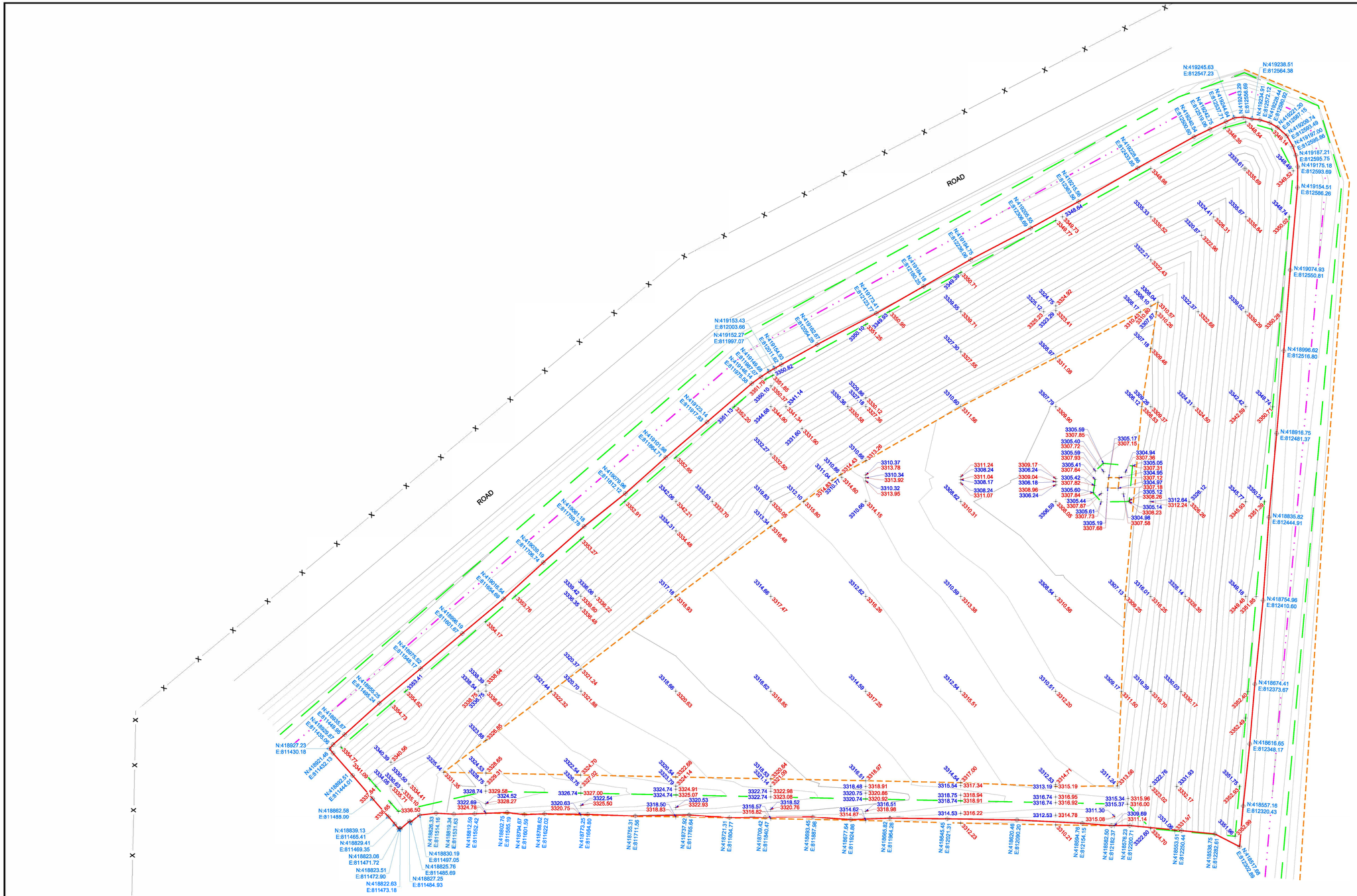
HIGH ROLLER EPC

NORTH RANCH LANDFILL

CELL E-1 TOP OF PROTECTIVE COVER AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL_CELL E-1 TOP OF PROTECTIVE COVER	REV. 0
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=50'	PAGE 1 OF 1		



NOTES:

1. BEARINGS, DISTANCES, AREA AND COORDINATES SHOWN HEREON ARE CORRELATED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM OF 1983, EAST ZONE, AS DETERMINED BY GPS OPUS OBSERVATIONS. ALL BEARINGS AND DISTANCES SHOWN ARE GRID.
2. LATITUDE & LONGITUDE ARE NAD 83 DECIMAL GEOGRAPHIC.
3. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT AND THE REVIEW OF THE ABSTRACT OF TITLE. THERE MAY BE EASEMENTS AND/OR COVENANTS AFFECTING THIS PROPERTY NOT SHOWN HEREON. LOCATION OF ALL IMPROVEMENTS WAS BEYOND COMMISSIONED SCOPE OF THIS PROJECT AND HAS BEEN SPECIFICALLY OMITTED. VESTING DOCUMENTS NOT FURNISHED FOR THIS SURVEY.

CHARLES L. JURICA
NEW MEXICO
25490
PROFESSIONAL SURVEYOR

I, CHARLES L. JURICA, A NEW MEXICO PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHARLES L. JURICA — NEW MEXICO PS #25490 — 07/15/2022 DATE

50' 0' 50' 100'
SCALE: 1" = 50'

LEGEND

	EDGE OF LINER
3342	AS-BUILT GRADE CONTOUR - 2'
3340	AS-BUILT GRADE CONTOUR - 10'
3334.90	PROTECTIVE COVER DESIGN ELEVATION
3334.92	PROTECTIVE COVER AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE
	CHANNEL FLOWLINE
x x	FENCE
N:418916.75 E:812481.37	EDGE OF LINER COORDINATES

TRANSGLOBAL SERVICES LLC
TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK
1	07/15/22	RRG	UPDATED WITH POINTS FROM 07/14/22	CHK

PROJECT NO. 8412

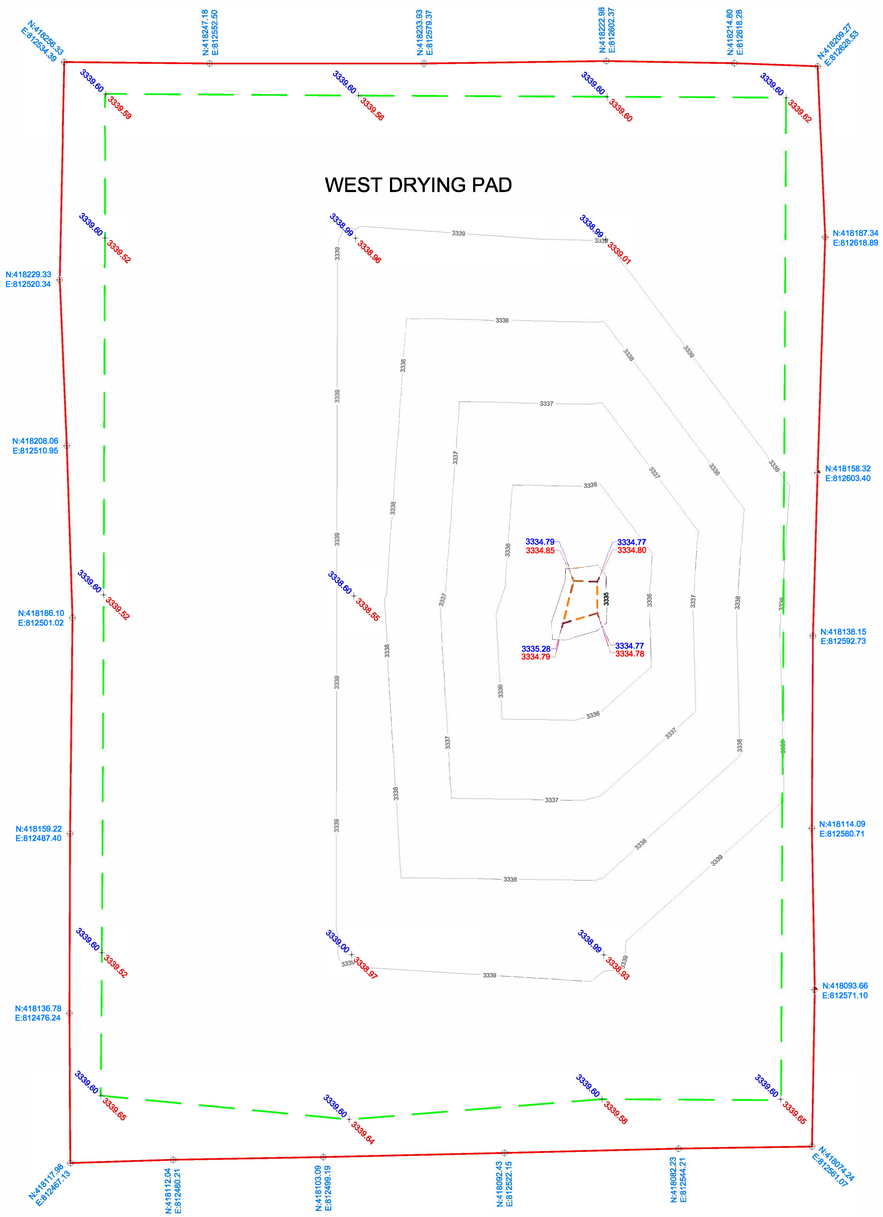
HIGH ROLLER EPC

NORTH RANCH LANDFILL

CELL E-1 TOP OF PROTECTIVE COVER AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL_CELL E-1 TOP OF PROTECTIVE COVER_REV 1	REV. 1
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=50'	PAGE 1 OF 1		



NOTES:

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CHARLES L. JURICA NEW MEXICO 25490 PROFESSIONAL SURVEYOR

I, CHARLES L. JURICA, A NEW MEXICO PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHARLES L. JURICA — NEW MEXICO PS #25490 — 07/13/2022 DATE

10' 0' 10' 20'
SCALE: 1" = 10'

LEGEND

	EDGE OF LINER
3341	AS-BUILT GRADE CONTOUR - 1'
3345	AS-BUILT GRADE CONTOUR - 5'
+ 3334.90	SUBGRADE DESIGN ELEVATION
+ 3334.92	SUBGRADE AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE
N:418916.75 E:812481.37	EDGE OF LINER COORDINATES

TRANSGLOBAL SERVICES LLC
TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK

PROJECT NO. 8412

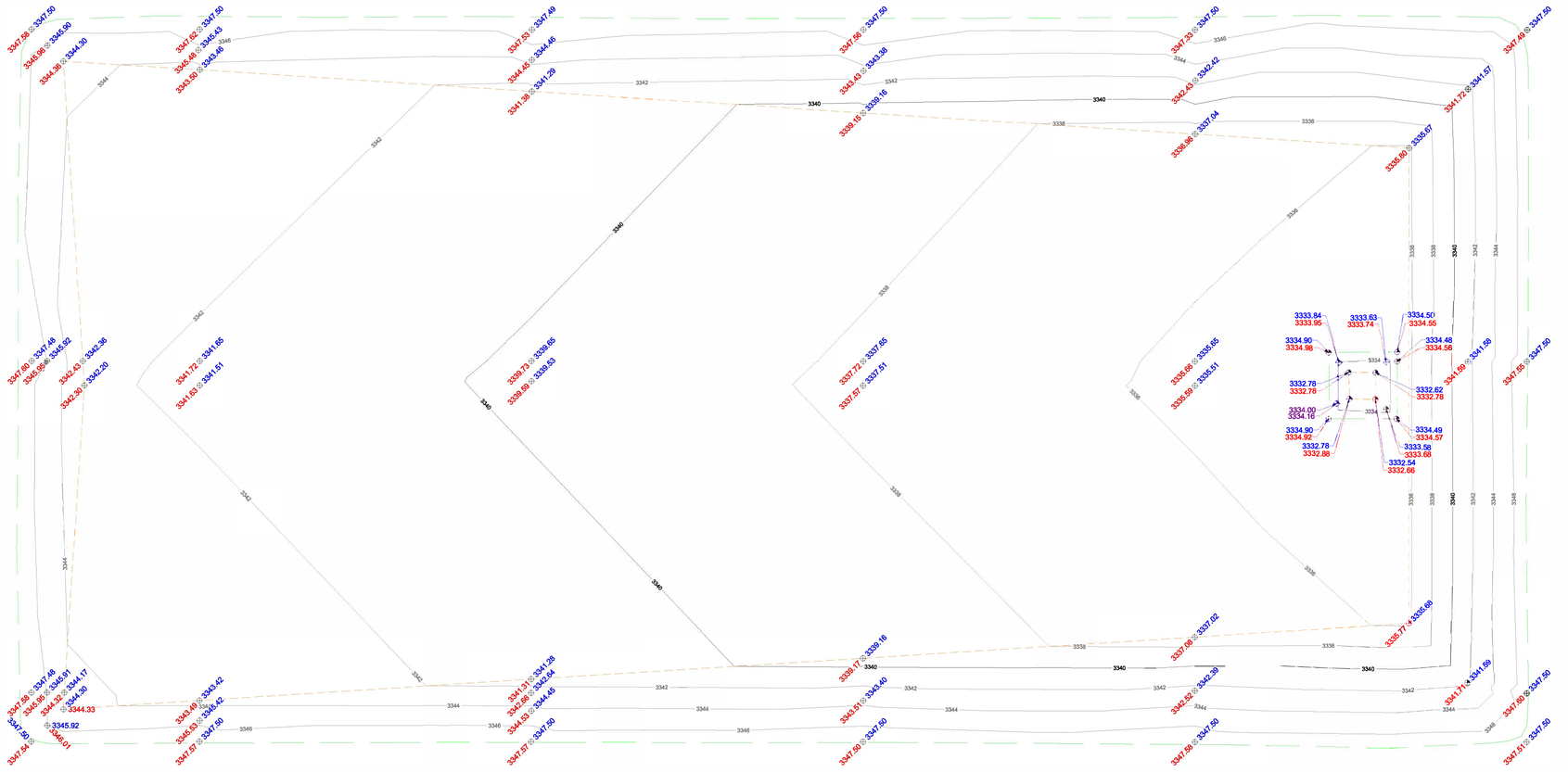
HIGH ROLLER EPC

NORTH RANCH LANDFILL

DRYING PAD SUBGRADE AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL_DRYING PAD	REV. 0
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=10'	PAGE 1 OF 1		



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CHARLES L. JURICA NEW MEXICO 25490 PROFESSIONAL SURVEYOR

I, CHARLES L. JURICA, A NEW MEXICO PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

07/13/2022
CHARLES L. JURICA NEW MEXICO PS #25490 DATE

20' 0' 20' 40'
SCALE: 1" = 20'

LEGEND

3342	AS-BUILT GRADE CONTOUR - 1'
3340	AS-BUILT GRADE CONTOUR - 5'
3334.90	SUBGRADE DESIGN ELEVATION
3334.92	SUBGRADE AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE

TRANSGLOBAL SERVICES LLC
TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK

PROJECT NO. 8412

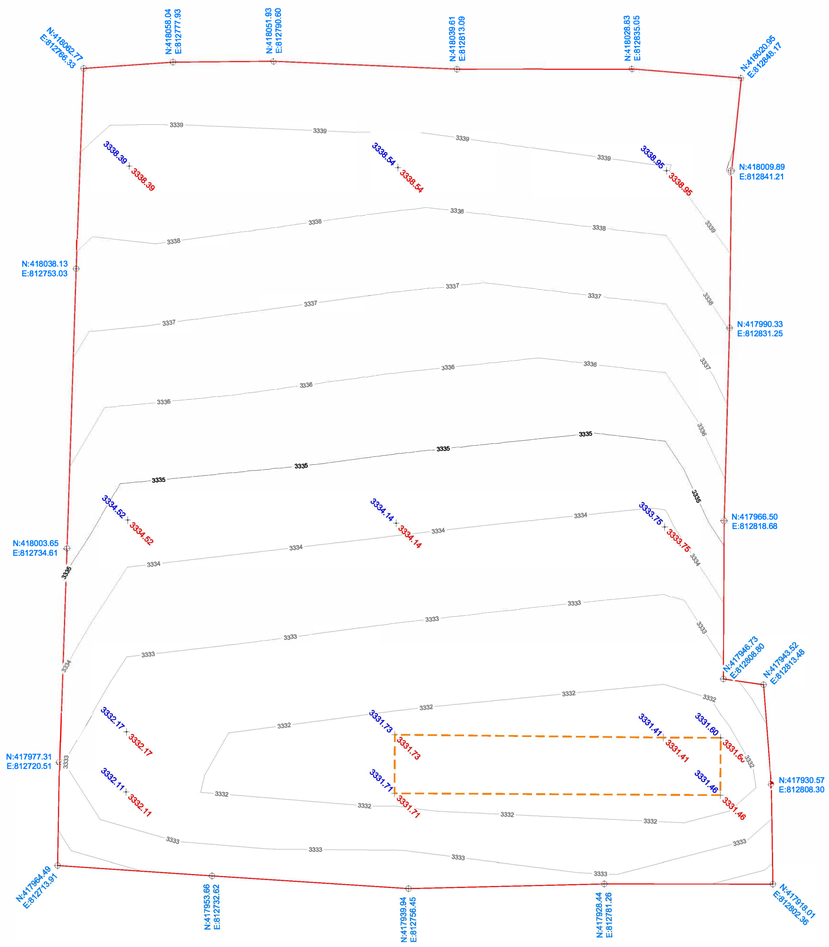
HIGH ROLLER EPC

NORTH RANCH LANDFILL

LEACHATE POND SUBGRADE AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL LEACHATE POND SUBGRADE	REV. 0
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=20'	PAGE 1 OF 1		



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CHARLES L. JURICA NEW MEXICO 25490 PROFESSIONAL SURVEYOR

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CHARLES L. JURICA NEW MEXICO PS #25490 07/13/2022
DATE

10' 0' 10' 20'
SCALE: 1" = 10'

LEGEND

	EDGE OF LINER
3341	AS-BUILT GRADE CONTOUR - 1'
3345	AS-BUILT GRADE CONTOUR - 5'
+ 3334.90	SUBGRADE DESIGN ELEVATION
+ 3334.92	SUBGRADE AS-BUILT ELEVATION
	TOP OF SLOPE
	TOE OF SLOPE
N:418916.75 E:812481.37	EDGE OF LINER COORDINATES

TRANSGLOBAL SERVICES LLC
TBPELS FIRM# 10193740
2129 S Great Southwest Parkway Suite 313
Grand Prairie, TX 75051
(817) 529-1180 ~ Fax (817) 529-1181

#	DATE	BY:	DESCRIPTION	CHK

PROJECT NO. 8412

HIGH ROLLER EPC

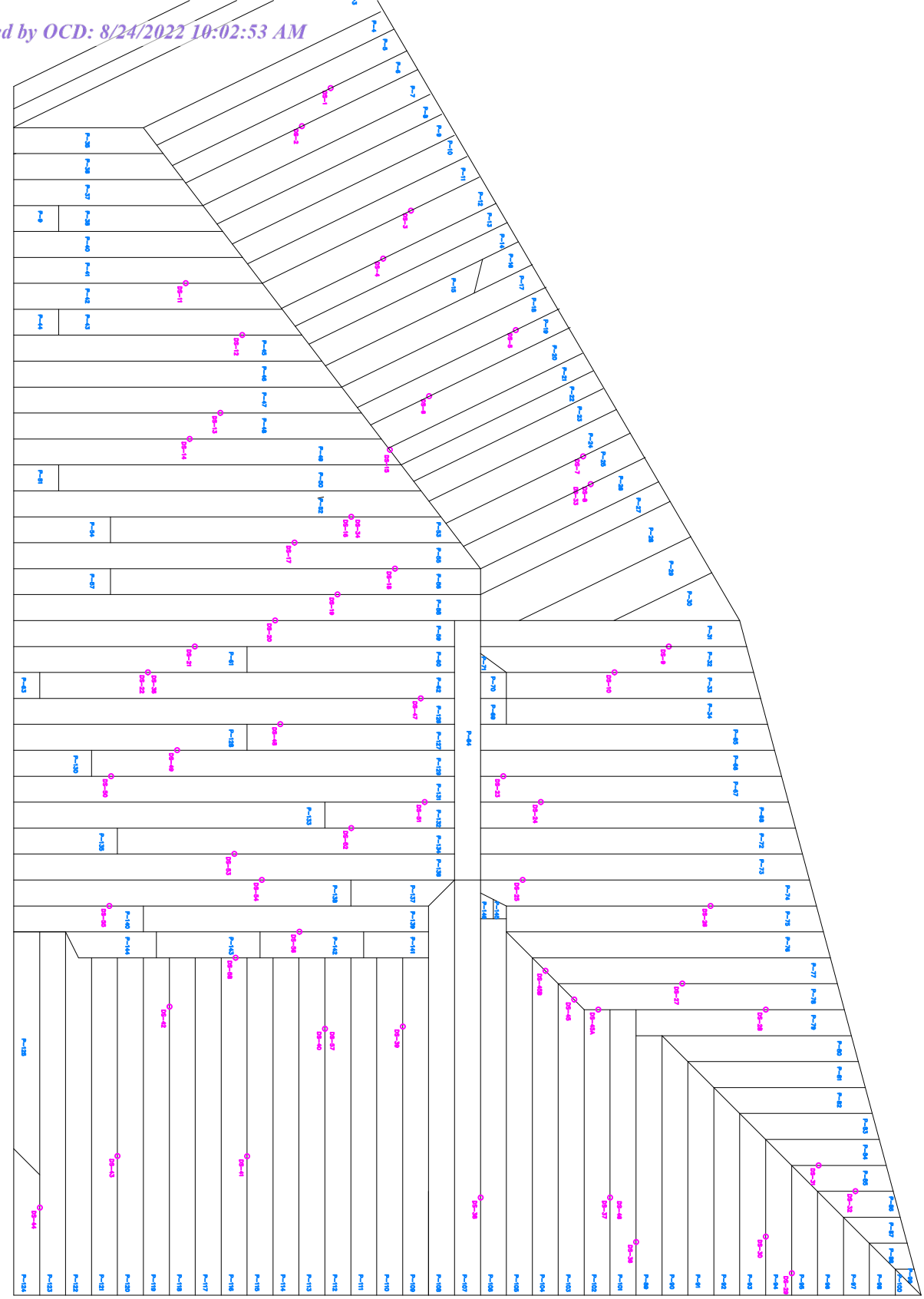
NORTH RANCH LANDFILL

DRYING PAD SUBGRADE AS-BUILT EXHIBIT

SITUATED IN
SECTION 10
TOWNSHIP 25 SOUTH, RANGE 34 EAST
NEW MEXICO PRINCIPAL MERIDIAN
LEA COUNTY, NEW MEXICO

DRAWN BY: RRG	DATE: 06/30/22	DWG. NO. 8412 NORTH RANCH LANDFILL_TRUCK WASH	REV. 0
CHECKED BY: XXX	DATE: XX/XX/XX		
SCALE: 1"=10'	PAGE 1 OF 1		

APPENDIX C-4:
AS-BUILT
GEOMEMBRANE
PANEL LAYOUTS



W N S E

LINER SEAMS

PATCH
REPAIR

P-97 PANEL #
DESTRUCT
DS-18

MUSTANG extreme environmental services

PRIMARY LINER

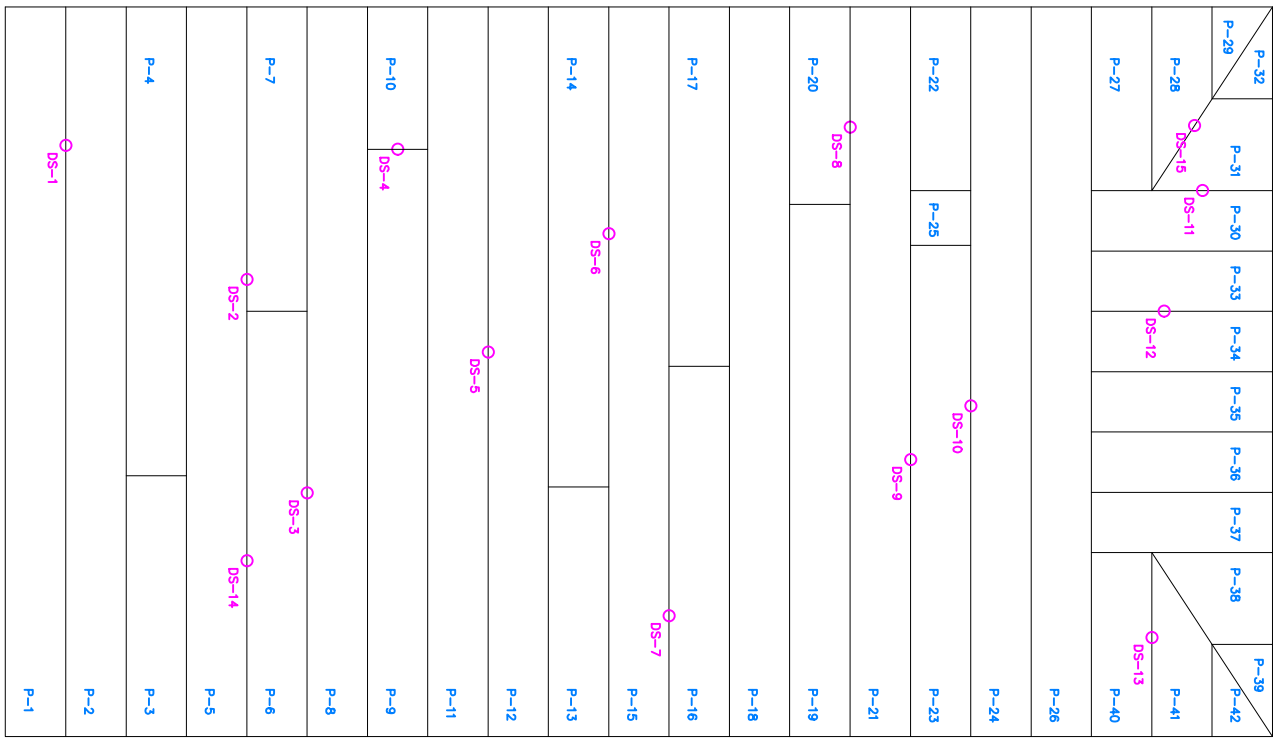
5049 EDWARDS RANCH RD STE 240
FORT WORTH TX 76109

PHONE: 817-441-1235
WWW.MUSTANGEXTREME.COM

HIGH ROLLER
NORTH RANCH
60 MIL HDPE BLACK SMOOTH LINER

REVISION: 0
DATE: MAY 2022
NOT TO SCALE
DRAWN BY: TR

SHEET NO. 1 OF 1



LINER SEAMS

PATCH
REPAIR

S-97 PANEL #
DESTRUCT
DS-18

N
W E
S

SHEET NO.
1 OF 1

MUSTANG extreme environmental services

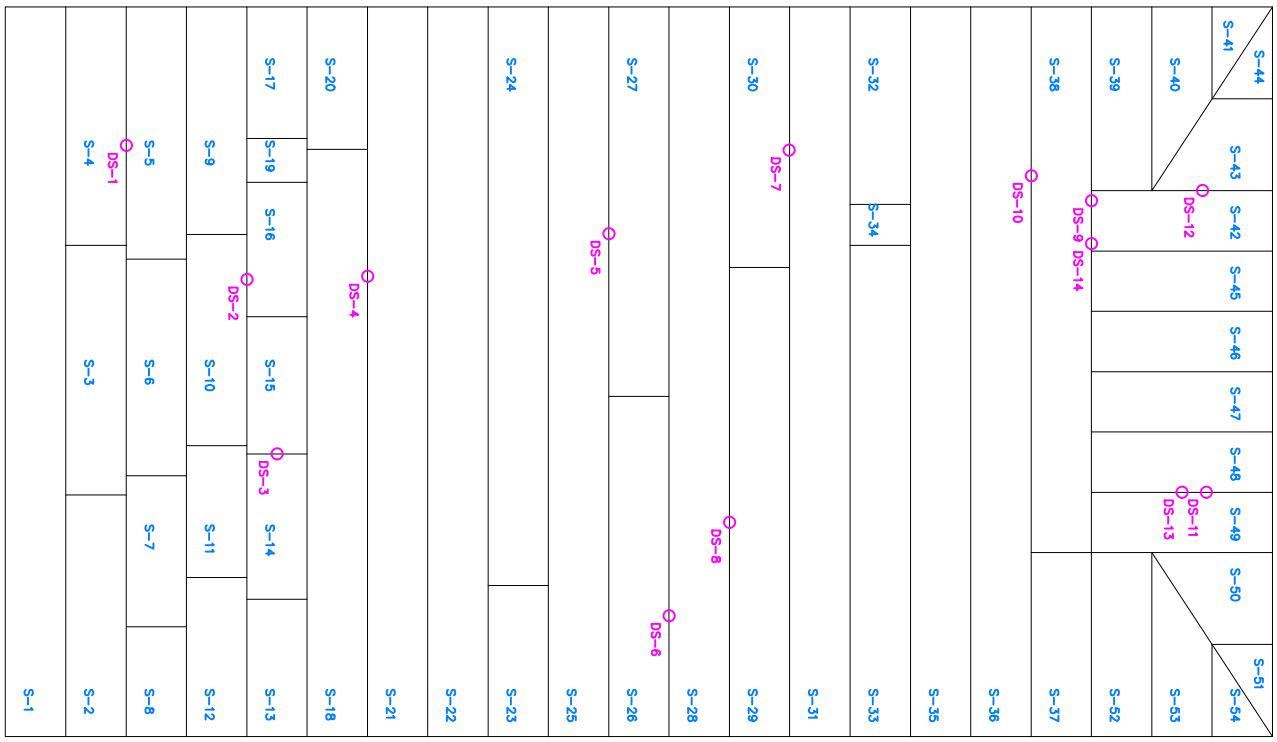
PRIMARY LINER

5049 EDWARDS RANCH RD STE 240
FORT WORTH TX 76109

PHONE: 817-441-1235
WWW.MUSTANGEXTREME.COM

HIGH ROLLER
NORTH RANCH LEACHATE POND
60 MIL HDPE BLACK SMOOTH LINER

REVISION: 0
DATE: MAY 2022
NOT TO SCALE
DRAWN BY: TR



W E S N

LINER SEAMS

PATCH
REPAIR

S-97 PANEL #
DESTRUCT
DS-18

MUSTANG extreme environmental services

SECONDARY LINER

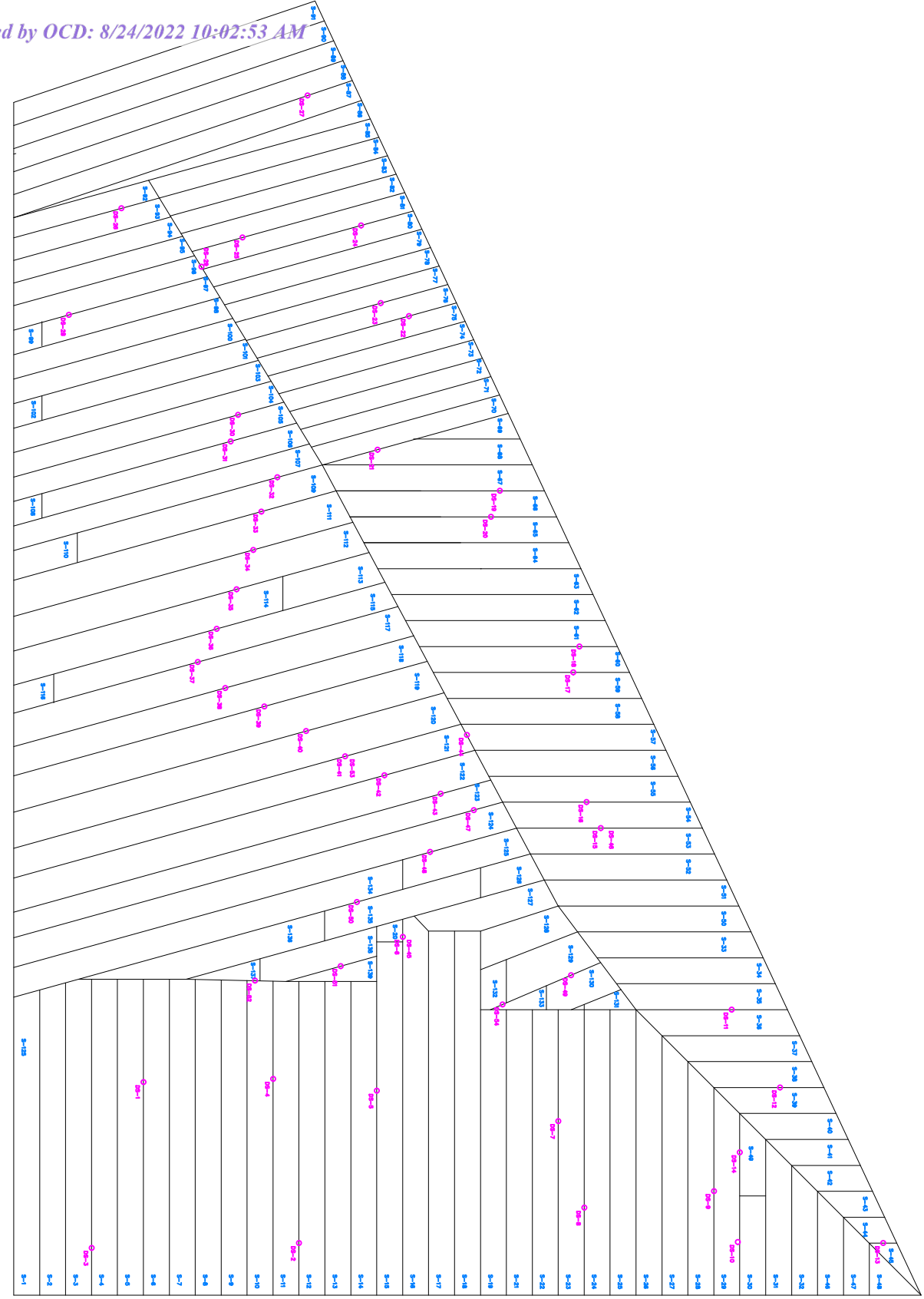
5049 EDWARDS RANCH RD STE 240
FORT WORTH TX 76109

PHONE: 817-441-1235
WWW.MUSTANGEXTREME.COM

HIGH ROLLER
NORTH RANCH LEACHATE POND
60 MIL HDPE BLACK SMOOTH LINER

REVISION: 0
DATE: MAY 2022
NOT TO SCALE
DRAWN BY: TR

SHEET NO.
1 OF 1



N W E S

LINER SEAMS

PATCH

REPAIR

S-97 PANEL #

DESTRUCT

DS-18

MUSTANG extreme environmental services

SECONDARY LINER

5049 EDWARDS RANCH RD STE 240
FORT WORTH TX 76109

PHONE: 817-441-1235
WWW.MUSTANGEXTREME.COM

HIGH ROLLER
NORTH RANCH
60 MIL HDPE BLACK SMOOTH LINER

REVISION: 0

DATE: APR 2022

NOT TO SCALE

DRAWN BY: TR

SHEET NO. 1 OF 1

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 137417

CONDITIONS

Operator:	OGRID:
NGL Waste Services, LLC 1008 Southview Circle Center, TX 75935	329268
	Action Number: 137417
	Action Type: [C-137] Non-Fee SWMF Submittal (SWMF NON-FEE SUBMITTAL)

CONDITIONS

Created By	Condition	Condition Date
bjones	None	8/24/2022