

BID PACKAGE

Site Preparation Mitchell County Athletic Complex

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BID FORM

SITE PREPARATION
MITCHELL COUNTY ATHLETIC COMPLEX

NAME OF BIDDER: _____

BIDDER'S ADDRESS: _____

BIDDER'S TELEPHONE NUMBER: _____

BIDDER'S EMAIL ADDRESS: _____

BIDDER'S GENERAL CONTRACTOR LICENSE NUMBER: _____

BIDDER'S CONTACT PERSON: _____

TYPE OF WORK : SITE PREPARATION INCLUDING UNDERCUT AND STRUCTURAL FILL OPERATIONS.

To:
Mitchell County
26 Crimson Laurel Way, Suite 2
Bakersville, NC 28705
Attn: Allen Cook

The undersigned, having carefully examined the Bidding Documents, the Scope of Work, the Survey Plat, the Site Plan, the Undercut summary and Replacement summary, the Geotechnical Engineering Report and having visited the site and being familiar with all conditions and requirements of the work, hereby agrees to furnish all labor and materials, equipment, services, etc., including all allowances to complete the site preparation for the construction of the 13,120 square foot athletic facility to be constructed upon the prepared site. The site to be prepared includes an area extending five feet from both ends and sides of the facility.

THE TOTAL BASE BID shall be the following:

SITE PREPARATION INCLUDING REMOVAL OF UNDOCUMENTED FILL SOILS AND MATERIALS

Site preparation shall consist of the following:

- a. Removal and disposal off site of all grass, sod and vegetation from the area to be undercut
- b. Saw cutting and disposal off site of a portion of an asphalt parking area located upon and adjacent to the southern edge of the area to be undercut. The portion to be removed is the portion lying north of a painted line on the asphalt.
- c. Removal and disposal of undocumented fill soils and materials. The area to be undercut is 190 feet in length. From the eastern end of the area for a distance of 120 feet the width of the area to be undercut is 86 feet and the width for the remaining length is 78 feet. Test borings indicate that this area consists of undocumented fill soil and materials which must be removed

and replaced. Analysis of the borings shows fill materials present to depths ranging from 5 feet to at least 8 feet. It is estimated that undercut will range in depth from 6.0 to 8.5 feet below existing grade . It is estimated by Catawba Valley Engineering and Testing that the existing fill soils and material that must be removed is 4420 cubic yards. These fill soils are not suitable for replacement fill material.

Price for Site Preparation Including Removal and Disposal of Undocumented Fill Soils and Materials: \$ _____

PROOFROLLING

After the site has been undercut the fill soil and material removed the exposed subgrade of the undercut area shall be evaluated by proofrolling as described in the Scope of Work and the Geotechnical Engineering Evaluation of the site prepared by Catawba Valley Engineering and Testing. Proofrolling shall be supervised by agents of Catawba Valley Engineering and Testing. If proofrolling reveals unstable areas these areas must be stabilized either by further undercutting and backfill with approved structural fill materials or stabilized with geosynthetics as recommended by the on-site geotechnical engineer. The charge for the purchase and installation of the geosynthetic material shall be bid as an additional cost and not included on your charge for proofrolling

Price for Proofrolling: \$ _____

REPLACEMENT WITH APPROVED FILL SOILS

Replacement with approved fill soils over the undercut area to a finished grade of 2465.67 feet. The estimated amount of replacement fill soils needed, factoring in compaction and shrinkage, is 5,500 cubic yards. The price includes the cost of temporary groundwater control, compaction, sealing and drying to protect soil subgrades from inclement weather and to meet the maximum dry density and optimum moisture content requirements included in the Scope of Work. Fill soil is to be furnished by the contractor and approved by the geotechnical engineer. If groundwater is encountered during undercut operations, replacement of the Undercut soils shall consist of processed stone backfill until above the stabilized groundwater Table. A heavy woven geotextile fabric (Mirafi HP370 or approved equivalent) shall be installed At the base of the undercut excavation and extended up the side walls to a height above the stabilized groundwater table. The cost of installation of the geotextile fabric and backfilling with processed stone, if required, shall be bid as an additional cost and shall not be included in cost of replacement with approved fill soils.

Price for Replacement with Approved Fill Soils: \$ _____

The TOTAL BASE BID for Site Preparation Including Removal of Undocumented Fill Soils and Materials, Proofrolling and Replacement with Approved Fill Soils is:

\$ _____

ADDITIONAL COSTS AND CHARGES THAT MAY BE INCURRED AND CHARGED TO MITCHELL COUNTY AS A RESULT OF THE PRESENCE OF GROUNDWATER IN THE UNDERCUT AREA and/or UNSTABLE AREAS DISCLOSED BY PROOFROLLING THAT IN THE OPINION OF CATAWBA VALLEY ENGINEERING AND TESTING REQUIRE THE INSTALLATION OF GEOTECTILE FIBER and/or AGGREGATE FILL MATERIAL

Installation of heavy woven geotextile fiber (Marifi HP370 or approved equivalent).

Price per square yard installed \$ _____

Fill consisting of aggregate fill material or processed stone

Price per cubic yard installed \$ _____

Credit for reductions in amount of approved fill soils installed as a result of substituting aggregate or processed stone instead of approved fill soils. This amount substituted should be equal to amount of aggregate or processed stone installed at the direction of Catawba Valley Engineering and Testing because of encountering groundwater or unstable areas exhibiting excessive rutting, pumping or similar distress.

Credit per cubic yard of approved
Fill Soils Replaced by Aggregate or
Processed Stone \$ _____

Contractor shall not be responsible for any charges made by Catawba Valley Engineering and Testing in its undercut supervision and monitoring of fill operations.

The undersigned acknowledges that he has read and understands the contents of the report entitled "Subsurface Exploration and Geotechnical Engineering Evaluation— Alternate Site" dated October 28, 2022 including all recommendations therein regarding Approved Fill Soils, Proofrolling, compaction density, approved compaction methods, and optimum moisture content and understand that an employee or employees of Catawba Valley Engineering may be present at the site at any time to observe, examine or test the work or materials and determine compliance with the Scope of Work. I understand that staff of Catawba Valley Engineering are employed by Mitchell County and paid by Mitchell County.

All Bidders are urged to visit "The Site" before submitting a bid for performance on the SCOPE OF WORK. The terms of THE SCOPE OF WORK are to be incorporated into the awarded contract by reference thereto. A copy of THE SCOPE OF WORK, a survey plat of "THE SITE" and a GEOTECHNICAL ENGINEERING REPORT of the findings of subsurface exploration of "THE SITE" and geotechnical

recommendations regarding Site Preparation made by Catawba Valley Engineering and Testing, a Site Grading Plan prepared by Cook Engineering, a Notice To Bidders, the list of Items to be Submitted with Bid, the List of Required Equipment and The Site Floodplain Improvement Plan are available at the office of Mitchell County Manager, 26 Crimson Laurel Circle, Suite 2, Bakersville, NC 28705 and will be furnished to each perspective bidder upon request. Request may be made in person, by mail, by telephone to the Mitchell County Manager (828-688-2139 or 828-385-0026) or by email to "manager@mitchellcountync.gov. All these documents may be downloaded at "mitchellcountync.gov.

BID GUARANTEE:

The undersigned further agrees to sign a contract for this work in the above stated amounts within 30 days after opening of Bids, and to furnish surety in the amount specified on the line entitled TOTAL BASE BID plus an additional 10% of that amount to cover additional costs and charges that may be incurred. No proposal for the performance of this work may be considered or accepted by the Mitchell County Board of Commissioners unless at the time of its filing the same shall be accompanied by a deposit with said governing board of a cashiers check or a certified check on some bank or trust company insured by the Federal Deposit Insurance Corporation in an amount equal to five percent of the herein required contract surety amount. In lieu of making the cash deposit you may file a bid bond executed by a corporate surety licensed under the laws of the State of North Carolina to execute such bonds, conditioned that the surety will upon demand forthwith make payment to Mitchell County upon said bond if the bidder fails to execute the contract in accordance with the bid bond. The deposit shall be retained should we fail to execute the contract within 30 days after the award or fail to give satisfactory surety as required herein.

PROPER LICENSES: The undersigned certifies that he is properly licensed to perform all work that is specified in the SCOPE OF WORK furnished to the undersigned by Mitchell County.

TIME OF COMPLETION: The undersigned agrees to begin work within 30 days after the execution of the contract with an adequate work force and necessary equipment to carry the work forward as rapidly as possible and complete the work within 60 consecutive calendar days.

This BID FORM is submitted with the following documents which must be completed and executed by the Bidder.

Identification of Minority Business Participation

Certificate that it intends to comply fully with the requirements of Article 2, Chapter 64, North Carolina General Statutes. (E-Verify Compliance Requirements)

NAME OF BIDDER _____

BY: _____

Title: _____

Date Bid Executed: _____

NOTICE TO BIDDERS

The undocumented fill soils and materials to be removed are not suitable for use as fill material and all these soils and materials must be disposed of off site.

The undercut must extend a minimum of 5.0 feet outside the limits of the structure location in all directions.

If groundwater is encountered during undercut operations, geotextile fiber installation may be required along the floor and sides of the undercut and aggregate backfill may be required to reach above the spring line.

All structural fill materials must be approved by Catawba Valley Engineering and Testing before placement in the undercut area.

The finished elevation of the filled and compacted undercut area shall be 2465.67 feet above sea level.

Catawba Valley Engineering and Testing will supervise the entire contract operations and the decisions of its supervising agents shall be final as to any method of performance, the suitability of materials for use and the compliance of installed materials with the requirements set out in the scope of work regarding material suitability, compaction methods, compaction strength, moisture content, and any other standard set forth in the Scope of Work.

A Performance Bond in the amount of the one hundred percent (100%) of the TOTAL BASE BID and an additional ten (10%) percent of that amount for ADDITIONAL COSTS AND CHARGES THAT MAY BE INCURRED conditioned upon the faithful performance of the contract in accordance with the Scope of Work and the conditions of the contract will be required upon the execution of the contract by the successful bidder.

A Payment Bond in the same amount as the Performance Bond and conditioned upon the prompt payment for all labor or materials for which the contractor or any subcontractor is liable will also be required upon the execution of the contract by the successful bidder. The Performance Bond and Payment Bond shall each fully comply with the requirements of North Carolina General Statutes, Chapter 44A, Article 3.

I certify that I am fully licensed to perform all the work that is specified in the Scope of Work.

I certify that I have read and understand this NOTICE TO BIDDERS and that I have been furnished with the Scope of Work, a Site Map

NAME OF BIDDER: _____

By: _____

SUBMIT WITH BID

Identification of Minority Business Participants

I, _____
(Name of Bidder)

do hereby certify that this project will use the following minority business enterprises as subcontractors, vendors, suppliers or providers of professional services.

Firm name, address and telephone number	Type of Work	Minority Category
1. _____		
2. _____		
3. _____		
4. _____		

- Minority Categories: B-Black, African American
H-Hispanic
A-Asian American
I-American Indian
F-Female
D Socially and Economically Disadvantaged

The estimated total value of minority business contracting will be \$ _____

SUBMIT WITH BID

E-Verify Compliance Requirements

Each bidder shall provide with the bid the following written assurances:

That it does now and will throughout the duration of the project fully comply with the requirements of Article 2, Chapter 64 North Carolina General Statutes and that it will throughout the duration of the project maintain records of verification of legal work status for all employees including records of verification on terminated employees for one year following termination of employment status.

That it will also require and monitor compliance with Article 2, Chapter 64 for each subcontractor awarded a portion of the work on the project by bidder unless the subcontractor documents that It has fewer than 25 employees at the time the subcontract is awarded and throughout the duration of the subcontract.

All E-Verify records of the successful bidder and its subcontractors shall be available for inspection by Mitchell County, North Carolina or its designee at reasonable times and after reasonable notice throughout the duration of the project.

I, _____, hereby state and declare that I am the _____ (title of entity official) of _____ (name of entity), and hereby certify to Mitchell County, that, as to any contract subsequently entered into with Mitchell County, that _____ (name of entity) intends to comply with the E-Verify requirements required under North Carolina General Statutes and as indicated above. Further, I declare that _____ (name of entity)) shall similarly require all subcontractors that contract with said entity to meet these same requirements.

Name of Authorized Officer

Title

Signature

Date

SCOPE OF WORK
MITCHELL COUNTY ATHLETIC COMPLEX

THE SITE

The Site is a parcel of real estate containing 0.500 acre owned by Mitchell County, North Carolina and located at 47 Crimson Laurel Circle, Bakersville, NC. The dimensions of The Site are shown accurately on a Survey Plat prepared by Mountaineer Land Surveying, P.A., dated November 8, 2022 and designated Job No. 22-138

Site Preparation Including Removal of Undocumented Fill Soil and Materials

All grass, sod and vegetation on the area to be excavated shall be removed. A portion of the asphalt along the south portion on the site must be removed. It is located on and along the southwestern portion of the site. It is marked by a painted line on the surface on the asphalt. It has dimensions of approximately 70'x 20'. All grass, sod, vegetation, and asphalt removed shall be lawfully disposed of. Mitchell County is planning to construct an athletic complex consisting of a gymnasium and auxiliary structure on real estate owned by Mitchell County located at 47 Crimson Laurel Circle, Bakersville, NC. (The Site) The subsurface of the site is composed of undocumented fill soil and unsuitable materials. The subsurface soils are not sufficient to support the weight of the structure and must be removed and replaced with approved fill soil compacted to at least 98 percent maximum dry density obtained in accordance with ASTM D-698, Standard Proctor Method, with a moisture content within +/- 3% of optimum moisture content (OMC). The existing site soils will not be suitable for reuse as structural fill. They must be removed from the site and placed elsewhere. Mitchell County owns an adjoining parcel of real estate a part of which may be suitable for placement of a portion of the removed soils provided they are leveled and compacted. The soil disposal area on the adjoining parcel of real estate is marked and flagged.

The total length of the building is 180 feet. The length of the gymnasium portion is 110 feet and the length of the remaining portion is 70 feet. The width of the gymnasium portion is 76 feet and the width of the remaining portion is 68 feet. The difference in width is offset 4 feet on each side. The entire building will be constructed on a concrete slab. The existing soils must be removed over the entire planned limits of the entire building and a minimum of 5 feet beyond the planned limits of the building in all directions. The existing soils will be removed to a depth of approximately eight feet under the gymnasium and five feet beyond the edge and to a depth of approximately 7 feet under the remaining portion of the building and 5 feet beyond edge of the remainder of the building. The northeast corner of the gymnasium will be located at a point that is 15 feet west of the eastern boundary of the property shown on the Site Map and 10 feet south of the northern boundary of the property shown on the Site Map referenced above. A copy of the Site Map is included in the Bid Package.

It is estimated that the volume of soils to be removed under the gymnasium and 5 feet beyond its planned limits is 2,900 cubic yards and that the volume of soils to be removed under the remaining portion of the building and 5 feet beyond its planned limits is 1520 cubic yards.

Proofrolling

After Site Preparation and Removal of Undocumented Fill Soil and Materials described above have been accomplished, the exposed subgrade shall be evaluated by proofrolling. This process shall be supervised and directed by a representative of Catawba Valley Engineering and Testing. This representative will be acting as agent of Mitchell County and shall have authority as agent to direct and approve the proofrolling. There will be no charge to the grading contractor for the charges made by Catawba Valley Engineering and Testing for its services. Proofrolling consists of driving appropriate equipment, typically a dump truck with axle weights of 10 or 20 tons for single or double axels respectively, over the subgrade at a walking pace. The proofrolling equipment should first make overlapping passes across the subgrade in one direction, followed by passes in a perpendicular direction. It is possible that significant areas of instability will be present due to the nature of the fill. Unstable areas that exhibit excessive rutting, pumping and/or similar distress shall be undercut to an approved materials and backfilled with structural fill soil, or stabilized with geosynthetics, as recommend by Catawba Valley Engineering and Testing.

Fill Soils Installation

After removal of all undocumented fill soils and materials within the area and to the depths required above and after the subgrade has been stabilized by proofrolling, including all necessary backfilling and geosynthetics stabilization as may be required by Catawba Valley Engineering and Testing, the entire undercut area shall be refilled with compacted structural fill. All structural fill soils shall be approved by Catawba Valley Engineering and testing before installation. Acceptable fill soils are soils with less than 5 percent organic content and a liquid limit and plasticity index less than 50 and 20 respectively. Soils within USCS group symbols of SP,SW,SM,SC, and ML may be suitable for use as controlled fill, although it is important to note that silty soils are very moisture sensitive and not as strong as sandy soils. Elastic silts (MH0 and plastic clays(CH) will only be considered for approval within the deepest fill sections and not within 4.0 feet of finished grades. All required fill soils shall be compacted to at least 98 percent of maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor Method, with moisture content within +/- 3% of the optimum moisture content (OMC).

No groundwater was encountered during the site soil testing. That testing consisted of drilling seven borings with a hollow stem auger 2.25 inches in diameter to depths ranging

between 5.1 feet and 18 feet. The geotechnical evaluation of the site prepared by Catawba Valley Engineering and Testing, including the analysis of these test borings is included in the bid package. Groundwater may be present and undetected. Soil moisture and groundwater location observed at the time of testing may vary from those that would be observed at other times of the year. If groundwater is encountered during the undercut operations, replacement of the undercut soils shall consist of processed stone backfill until above the stabilized groundwater table.

All fill soils should be placed in horizontal loose lifts and compacted with adequately-sized equipment. Loose lift thicknesses will vary depending on the size of the compaction equipment. A maximum of 8 inches is recommended for large self-propelled compactors, six inches for small self-propelled compactors, and 4 inches for remote-controlled compactors and hand-operated equipment (plate tampers, wacker-packers, or jumping jacks). Vibratory smooth-drum rollers are appropriate for cohesionless/course-grained soils and sheepsfoot rollers for cohesive/fine grained soils.

Positive site drainage should be maintained during earthwork operations to prevent the ponding of water on subgrades. Soil subgrades should be protected from inclement weather by 'sealing' subgrades before forecasted inclement weather and at any time contemplated filling operations are to be suspended for three days or more. 'Sealing' can be performed by rolling with a smooth steel-drum roller without vibration. Ruts should not be created during the 'sealing' operation. 'Sealed' subgrades should be scarified prior to placement of additional fill.

The existing elevation of "The Site" ranges between 2463 feet above sea level and 2466 feet above sea level. Finished compacted fill elevations will be 2465.67 feet above NAD 83/2011. It appears that only the western portion of "The Site" will require significant additional grade raised soils to reach an elevation of 2465.67 feet.

The base flood elevation for "The Site" is 2462.3 above NAD 83/2011. The western portion of "The Site" is in a "Special Flood Hazard Area" and is subject to a one percent (1%) or greater chance of being flooded in any given year. A Floodplain Development Permit has been issued for "The Site" and all work described in this "Scope of Work" is allowed by the Floodplain Development Permit. No part of "The Site" is in a "Floodway" or "Non-Encroachment Area".

It is estimated that the total replacement with approved structural fill soil, factoring in compaction and shrinkage is 5,500 cubic yards.

If groundwater is encountered during the undercut operations, replacement of the undercut soils shall consist of processed stone or aggregate backfill until above the stabilized groundwater table. The installation of a heavy woven geotextile (Mirifi HP370 or approved equivalent) over the base of the undercut and up the side walls of the undercut excavation to above the stabilized groundwater table may be required. Catawba Valley Engineering and Testing shall determine if geotextile fabric and/or stone backfill materials are required and the appropriate depth of the installation and shall approve the installation of the geotextile fiber and replacement materials before installation of the materials. If groundwater is encountered during the undercut operations Catawba Valley Engineering and Testing shall be immediately notified.

All work performed under a contract to perform this "Scope of Work" shall be supervised and directed by employees or agents of Catawba Valley Engineering and Testing and those agents and employees are authorized to document compliance with all requirements and

conditions established by this "Scope of Work" or by any code, regulation or ordinance pertaining to "The Site" or the work to be performed under this "Scope of Work" and to require such remedial action as may be necessary to attain compliance.

ADDITIONAL DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR

It is the duty of the contractor performing this "SCOPE OF WORK" to acquire all necessary materials including approved fill soils and any required aggregate or processed stone and to secure their approval as fill material from Catawba Valley Engineering and Testing before installation. The contractor shall furnish all vehicles and equipment necessary to perform the undercut, proofrolling, backfill and compaction required for the timely performance of this "SCOPE OF WORK". Mitchell County cannot and will not provide secure storage of vehicles, equipment or materials. Mitchell County does have an open field area in close proximity to "The Site" for parking vehicles and equipment when not in use. Mitchell County is not responsible for theft, damage or loss to any vehicle or equipment parked or placed on the open field or any other property owned by Mitchell County. A portion of that open field may also be used for dumping a portion of the removed undercut soils. However all dumped soils shall be leveled and compacted. The area for dumping will be designated by Mitchell County and if the contractor elects to dump undercut soil material on the open field it must be placed on the designated area and compacted to a depth designated by Mitchell County. The designated area and designated depths may not be sufficiently large to contain all the undercut and removed soil materials. The lawful disposal of all other removed materials shall be the exclusive responsibility of the contractor.

"The Site" is fenced with chain length fence or field fence along its northern, eastern and approximately one-half of its southern boundary. The western boundary and the remainder of the southern boundary are open and "The Site" is readily accessible along those boundaries. It will be the duty of the contractor to provide appropriate signs to inform all persons near "The Site" of the dangers associated with "The Site" and to install appropriate barriers, including additional fencing, to prevent unauthorized entry to "The Site" as may be required by Federal, State, and local laws and regulations pertaining to the construction site and the activities conducted thereon.



**CATAWBA VALLEY
ENGINEERING & TESTING**

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Hickory, NC 28603

161 Lenoir Rhyne Blvd. SE
Hickory, NC 28602

828 578 9972 O
www.cvet.net

NC Firm No. C-3833
SC Firm No. 5201

October 28, 2022

Mr. Allen Cook
County Manager
Mitchell County
26 Crimson Laurel Circle, Suite 2
Bakersville, North Carolina 28705
manager@mitchellcounty.org

RE: Subsurface Exploration and Geotechnical Engineering Evaluation
Mitchell County Recreation Facility – Alternate Site
47 Crimson Laurel Way
Bakersville, Mitchell County, North Carolina
CVET Project Number: 22-697


Dear Mr. Cook:

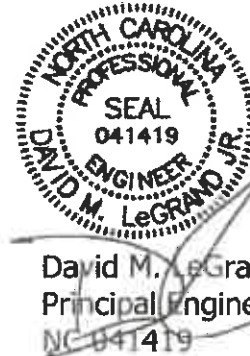
Catawba Valley Engineering and Testing (CVET) is pleased to submit to you our Geotechnical Engineering Report for the proposed Mitchell County Recreation Facility – Alternate Site located at 47 Crimson Laurel Way in Bakersville, North Carolina. This report presents the findings of our subsurface exploration and provides geotechnical recommendations for design and construction of the project.

CVET appreciates the opportunity to provide our geotechnical engineering services for this project. If you have any questions regarding the contents of this report, or if we can provide additional services for the project such as construction materials testing or special inspection observations, please do not hesitate to contact us.

Sincerely,

CATAWBA VALLEY ENGINEERING AND TESTING, P.C.


Cody Dobbins, E.I.
Project Manager



10/28/22

David M. LeGrand, Jr., P.E.
Principal Engineer
NC-041419

Geotechnical Engineering

Environmental Services

CMT/Special Inspections

Project Name: Mitchell County Recreation Facility Alternate Site
Location: Bakersville, Mitchell County, North Carolina
Date: October 28, 2022
Project No.: 22-697

1.0 PURPOSE AND SCOPE OF WORK

The purpose of the subsurface exploration and geotechnical engineering evaluation was to explore the subsurface conditions at the site, collect representative samples of soil for examination in our laboratory, and provide conclusions and recommendations for design and construction of the proposed Mitchell County Recreation Facility – Alternate Site located at 47 Crimson Laurel Way in Bakersville, North Carolina.

CVET's scope of work included the following:

- Drilling of eight (8) soil test borings;
- Collection of representative samples of soil from the soil test borings;
- Classification of collected soil samples and laboratory testing as necessary;
- Preparation of boring logs, boring location plan, and general subsurface profile;
- Evaluation of the encountered subsurface conditions at the site; and
- Preparation of this geotechnical report.

2.0 PROJECT INFORMATION

The project consists of the subsurface exploration and geotechnical engineering evaluation to aid in the design and construction of the proposed alternate site for the Recreation Facility and Athletic Complex for Mitchell County located at 47 Crimson Laurel Way in Bakersville, North Carolina. The facility will be approximately 170 feet by 80 feet in dimension and will be constructed of a pre-engineered metal building. It is our understanding that existing site grades will require a 1.0 to 3.0 feet of grade raised fill soils to achieve an elevation greater than the base flood elevation.

3.0 EXPLORATION PROCEDURES

Exploration procedures for this project included drilling test borings at the site and laboratory testing of representative soil samples at our laboratory in Hickory, North Carolina.

3.1 Field Exploration

The subsurface conditions at the site were explored by drilling eight (8) soil test borings (denoted B-1 through B-8) at the locations indicated on Figure 2 – Boring Location Plan in Appendix A. Borings B-05 and B-08 could not be completed due to utility conflicts and or being inaccessible. The borings were drilled on October 3, 2022 and extended to depths ranging from 5.1 to 18.6 feet below existing site grades. The boring locations were located in the field by CVET personnel using existing site features as a reference. Boring elevations were approximated using the provided site plan, therefore, the boring

Project Name: Mitchell County Recreation Facility Alternate Location
Location: Bakersville, Mitchell County, North Carolina
Date: October 28, 2022
Project No.: 22-697

4.2 Soils

A generalized subsurface profile has been prepared for the site - see Figure 3 in Appendix A. Soil boring logs are included in Appendix B. The area being evaluated generally consists of topsoil underlain by undocumented fill and residual soils. The generalized subsurface conditions are described below.

Fill soils were observed in all of the completed soil test borings to depths ranging from approximately 5.0 to at least 8.0 feet below existing site grades. The fill soils were not penetrated in soil test boring B-08. The fill soils consist of dry to moist, silty sand (SM), sandy clay (CL), sandy fat clay (CH) and clayey sand (SC). SPT N-values within the fill soils ranged from 5 to 50+ blows per foot (bpf), indicating medium stiff to very hard cohesive soil consistencies and 15 to 50+ bpf, indicating medium dense to very dense cohesionless soil consistencies. Elevated blow counts within the existing fill soils is likely attributed to the large rocks observed in the soil samples and are artificially inflated.

Residual soils were encountered underlying the existing fill soils in all soil test boring with the exception of boring B-07. The residuum mainly consists of dry to moist silty sand (SM) and sandy silt (ML). SPT N-Values within the residuum range from 16 to 50+ bpf, indicating medium dense to very dense cohesionless soil consistencies.

4.3 Partially Weathered Bedrock (PWR) and Bedrock

Refusal conditions were encountered in six soil test borings. See the below table for depths of PWR and unweathered bedrock.

Boring	Depth to PWR (ft.)	Depth to Bedrock (ft.)
B-01	6.5	6.8
B-02	11.5	11.5
B-03	5.0	5.1
B-03a	18.5	18.6
B-04	13.5	13.5
B-06	9.5	9.8

4.4 Groundwater

Groundwater was not observed during this exploration, however groundwater tends to run between the interface of residual soils and partially weathered rock, and partially weathered rock and unweathered bedrock. Note that each borehole was left open for only a short period of time during the drilling operation, so the detection of groundwater during this brief period is difficult. Also note that soil moisture and groundwater conditions vary depending on conditions such as temperature, precipitation and season.

Project Name: Mitchell County Recreation Facility Alternate Location
Location: Bakersville, Mitchell County, North Carolina
Date: October 28, 2022
Project No.: 22-697

should first make overlapping passes across the subgrade in one direction, followed by passes in a perpendicular direction. We recommend that the proofrolling be observed by a qualified engineer or engineering technician.

As a result of the encountered fill, we anticipate significant areas of instability will be present. Unstable areas that exhibit excessive rutting, pumping and/or similar distress should be undercut to an approved materials and backfilled with structural fill soil, or stabilized with geosynthetics, as recommended by a qualified geotechnical engineer.

If conditions revealed during site preparation operations vary from those described in this report, the on-site geotechnical engineer shall contact the engineer of said report to discuss potential options to address the varying site conditions.

5.3 Earthwork

It is our understanding that grade raised fill will be required to achieve an elevation of at least 1.0 feet above base flood elevation. Fill depths will likely range from approximately 1.0 to 3.0 feet above existing site grades.

We do not anticipate existing site soils will be suitable for reuse as structural fill.

Any required fill soils should be compacted to at least 98 percent of the maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor Method, with a moisture content within +/- 3% of the optimum moisture content (OMC). Acceptable fill soils should be soil that has less than 5 percent organic content and a liquid limit and plasticity index less than 50 and 20, respectively. Soils with USCS group symbols of SP, SW, SM, SC, and ML are recommended for use as controlled fill, although it is important to note that silty soils are very moisture sensitive and not as strong as sandy soils. Elastic silts (MH) and plastic clays (CH) should only be utilized within the deepest fill sections and should not be utilized as structural fill within 4.0 feet of finished grades unless approved by CVET prior to placement and compaction operations. All fill soils should be placed in horizontal loose lifts and compacted with adequately-sized equipment. Loose lift thicknesses will vary depending on the size of the compaction equipment: we recommend a maximum of 8 inches for large self-propelled compactors, 6 inches for small self-propelled compactors, and 4 inches for remote-controlled compactors and hand-operated equipment (plate tampers, wacker-packers, or jumping jacks). Vibratory smooth-drum rollers are appropriate for cohesionless/coarse-grained soils while sheepsfoot rollers are appropriate for cohesive/fine-grained soils. Localized undercut and replacement should be anticipated in areas to receive structural fill due to the existing fill soils.

We recommend that positive site drainage is maintained during earthwork operations to prevent the ponding of water on exposed subgrades. Soil subgrades should be protected

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the side walls of the undercut excavation. If this option is elected, shallow foundations for buildings should be designed with an allowable net bearing pressure of up to 3,000 pounds per square foot. We recommend minimum foundation widths and embedment depths of 24 and 18 inches, respectively.

A site-specific settlement analysis has not been performed. However, based upon the loading provided and the requirement that the foundation subgrade soils bear in the remedial measures states above (to be verified by CVET or another qualified CMT firm), we expect total settlements of structure foundations to be on the order of 1 inch. In general, differential settlements between building components are expected to be on the order of 1/3 to 1/2 of the total settlements.

Drilled Deep Foundation System

An alternative to undercut and replacement, the proposed foundations can be supported on a drilled deep foundation system bearing in partially weathered bedrock and/or unweathered bedrock. We conclude if this option is elected that grade raised fill be installed over existing site soils to proposed subgrade elevation and the drilled foundation system be designed to accommodate any potential down-drag resulting from the compression of the existing fill/alluvial soils.

The drilled, deep foundation system should neglect any capacity from the newly placed structural fill soils and the existing fill/alluvial soils and should generate their capacity in partially weathered bedrock or unweathered bedrock. We recommend a minimum of a 5.0 foot socket in partially weathered bedrock and a minimum of 3.0 feet embedment in unweathered bedrock.

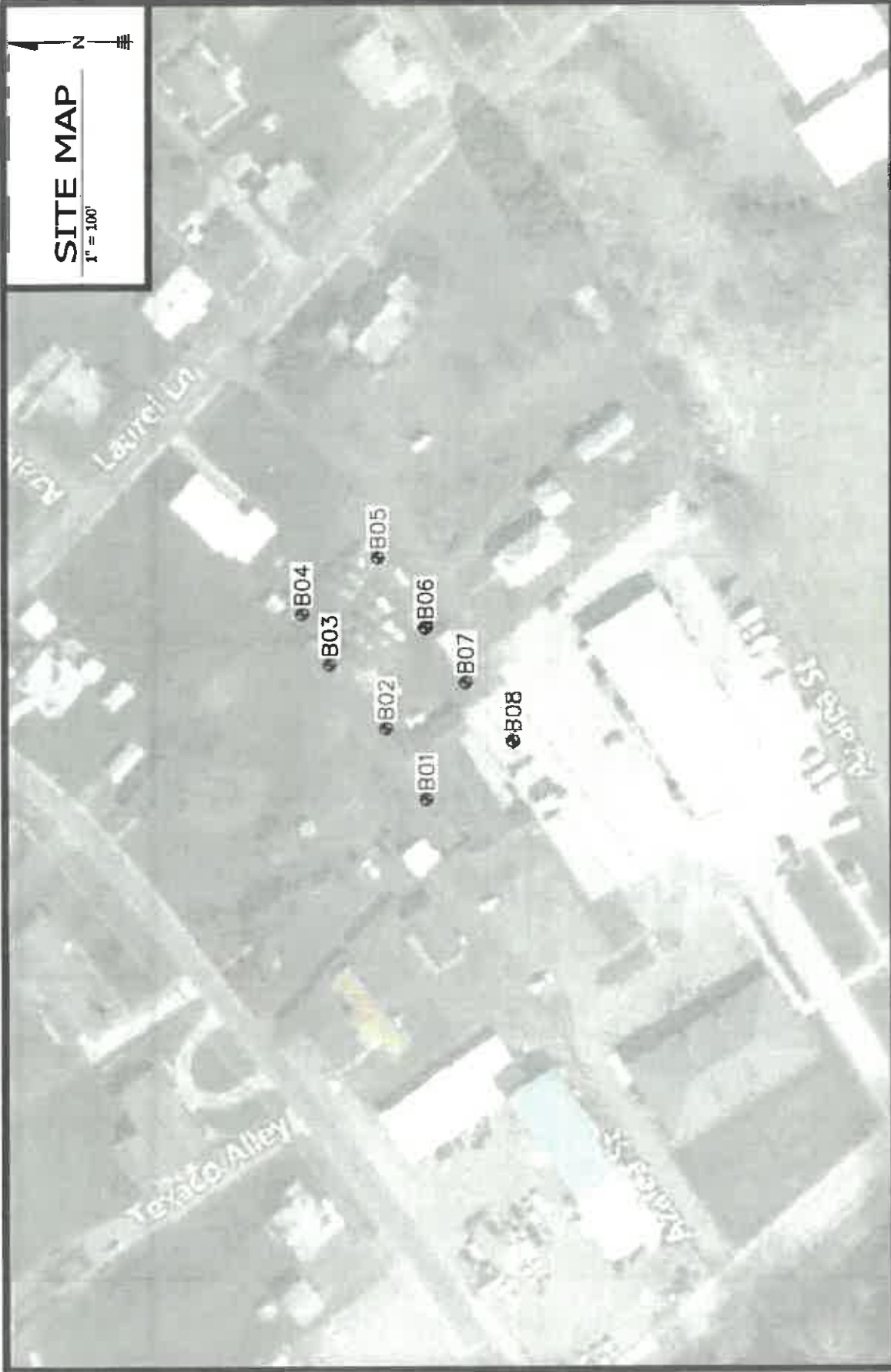
Based upon the encountered conditions we recommend an ultimate skin friction capacity of 4,000 psf in partially weathered bedrock and 6,000 psf in unweathered bedrock. An ultimate capacity of 10,000 psf can be utilized for end bearing in unweathered bedrock. Any deep foundation should be designed with a factor of safety of at least 2.5.

5.6 Floor / Concrete Slabs

If undercut and replacement for foundation support is implemented, we recommend that grade slabs be supported on newly compacted structural fill soils. If grade slabs are supported on newly compacted, structural fill soils we recommend a modulus of subgrade reaction (k) of up to 100 pounds per cubic inch for structural design of the floor slab. This value is representative of a 1-ft square loaded area and may need to be adjusted depending the size and shape of the loaded area depending on the method of structural analysis.

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APPENDIX A – PROJECT FIGURES



SITE MAP

1" = 100'

DRAWN BY DIH	PROJECT NO. 22-697
DATE 09/13/2022	SHEET NO. FIG. 2

MITCHELL COUNTY ATHLETIC COMPLEX

CRIMSON LAUREL WAY
BAKERSVILLE, NC 28705

**CATAWBA VALLEY
ENGINEERING & TESTING**

P.O.B. 117 REGENCY, NORTH CAROLINA 28603
TELE: 828-518-5922



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APPENDIX B – BORING LOGS

CLIENT Mitchell County PROJECT NAME Mitchell Co. Rec. Alternate
 PROJECT NUMBER 22697 PROJECT LOCATION Bakersville NC
 DATE STARTED 10/3/22 COMPLETED 10/3/22 GROUND ELEVATION 2464 ft MSL HOLE SIZE 2.25 inches
 DRILLING CONTRACTOR CVET GROUND WATER LEVELS:
 DRILL RIG NUMBER 1 HAMMER EFFICIENCY 91% TIME OF BORING —
 DRILLING METHOD 2.25 Hollow Stem Auger END OF BORING — Cave at: 2.5
 LOGGED BY TV CHECKED BY DH NOTES Elevation Data Pulled From NCOneMap 2' Contours

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PLASTICITY INDEX	MOISTURE CONTENT	▲ SPT N VALUE ▲						
								20	40	60	80			
0.0		(CL/CH) FILL: Sandy CLAY, Organics, Light Brown, Light Tan Brown, Moist to Wet, Medium Stiff												
2.5		(ML/MH) FILL: Sandy SILT, Tan, Moist to Wet, Medium Stiff	SS 1	100	5-3-3 (6)									
5.0		(SM) RESIDUAL: Silty SAND, Large Angular Aggregate, Gray, Blue Gray, Dry	SS 2	100	2-2-3 (5)									
		(SM) PWR: Silty SAND, Large Angular Aggregate, Gray, Blue Gray, Dry	SS 3	60	32-50/4"									
		Bottom of borehole at 6.8 feet.												

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 CVET STANDARD

CLIENT Mitchell County PROJECT NAME Mitchell Co. Rec. Alternate
 PROJECT NUMBER 22697 PROJECT LOCATION Bakersville, NC
 DATE STARTED 10/3/22 COMPLETED 10/3/22 GROUND ELEVATION 2464 ft MSL HOLE SIZE 2.25 inches
 DRILLING CONTRACTOR CVET GROUND WATER LEVELS:
 DRILL RIG NUMBER 1 HAMMER EFFICIENCY 91% TIME OF BORING —
 DRILLING METHOD 2.25 Hollow Stem Auger END OF BORING --- Cave at: 3
 LOGGED BY TV CHECKED BY DH NOTES Elevation Data Pulled From NCOneMap 2' Contours

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PLASTICITY INDEX	MOISTURE CONTENT	▲ SPT N VALUE ▲						
								20	40	60	80			
0		TOPSOIL: (3 Inches)												
		(CL/CH) FILL: Sandy CLAY, Organics, Roots, Petroleum Odor at 1.0-2.5', Angular Rock Fragments, Light Brown, Gray Brown, Moist, Medium Stiff to Very Stiff												
2463.8														
1														
2			SS 1	67	3-3-2 (5)									
3														
4														
2459.0			SS 2	100	3-7-11 (18)									
2458.9														
5		PWR: No Recovery	SS 3	0	50/1"									
		Refusal at 5.1 feet. Bottom of borehole at 5.1 feet.												

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CLIENT Mitchell County PROJECT NAME Mitchell Co. Rec. Alternate
 PROJECT NUMBER 22697 PROJECT LOCATION Bakersville NC
 DATE STARTED 10/3/22 COMPLETED 10/3/22 GROUND ELEVATION 2484 ft MSL HOLE SIZE 2.25 inches
 DRILLING CONTRACTOR CVET GROUND WATER LEVELS:
 DRILL RIG NUMBER 1 HAMMER EFFICIENCY 91% TIME OF BORING --
 DRILLING METHOD 2.25 Hollow Stem Auger END OF BORING -- Cave # 7
 LOGGED BY TV CHECKED BY DH NOTES Elevation Data Pulled From NCOneMap 2' Contours

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PLASTICITY INDEX	MOISTURE CONTENT	▲ SPT N VALUE ▲						
								20	40	60	80			
0.0		TOPSOIL: (4 Inches) (ML/MH) FILL: Sandy SILT, Organics, Tan, Black, Moist, Stiff												
2.5			SS 1	100	4-4-8 (12)									
5.0		(SP) FILL: SAND, Large Angular Aggregate, Petroleum Odor at 6.0-7.5', Gray, Tan, Dry to Moist, Very Dense	SS 2	100	17-28-23 (51)									
7.5			SS 3	56	11-21-39 (60)									
10.0		(ML) RESIDUAL: Sandy SILT, Angular Aggregate, Tan, Orange Tan, Dry to Moist, Very Stiff	SS 4	39	3-7-9 (16)									
12.5		RESIDUAL: No Recovery												
		PWR: No Recovery Refusal at 13.5 feet. Bottom of borehole at 13.5 feet.	SS 5		50/0"									

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CLIENT Mitchell County PROJECT NAME Mitchell Co. Rec. Alternate
 PROJECT NUMBER 22697 PROJECT LOCATION Bakersville NC
 DATE STARTED 10/3/22 COMPLETED 10/3/22 GROUND ELEVATION 2465 ft MSL HOLE SIZE 2.25 inches
 DRILLING CONTRACTOR CVET GROUND WATER LEVELS:
 DRILL RIG NUMBER 1 HAMMER EFFICIENCY 91% TIME OF BORING --
 DRILLING METHOD 2.25 Hollow Stem Auger END OF BORING -- Cave at: 3
 LOGGED BY TV CHECKED BY DH NOTES Elevation Data Pulled From NCOneMap 2' Contours

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	PLASTICITY INDEX	MOISTURE CONTENT	▲ SPT N VALUE ▲						
								20	40	60	80			
0.0		TOPSOIL: (3 inches) 2464.8												
		(CL/CH) FILL: Sandy CLAY, Organics, Roots, Angular Aggregate, Light Brown, Gray Brown, Moist, Medium Stiff to Very Stiff												
2.5			SS 1	100	3-3-3 (6)									
			SS 2	100	2-2-16 (18)									
5.0														
		(SP) FILL: SAND, Large Angular Aggregate, Large Quartz, Gray, Brown, Dry to Moist, Very Dense 2459.5												
			SS 3	67	32-30-27 (57)									
7.5			SS 4	67	12-22-30 (52)									
		Bottom of borehole at 9.0 feet. 2456.0												

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List of Required Equipment

The Bidder certifies that it possesses or will possess as needed to perform the Scope of Work all necessary equipment including the following:

- 1. One Trackhoe that is or is equivalent in size and capacity to a Caterpillar 320.**
- 2. Two double rear axle dumptrucks with twenty ton axle weight.**
- 3. Compactors capable of compacting approved structural fill soils to at least 98 percent maximum dry density obtained in accordance with ASTM Specification D-698, Standard Proctor Method.**
- 4. A vibratory drum roller and a sheepsfoot roller.**
- 5. All other equipment and vehicles necessary to perform the scope of work in conformity with all standards and methods contained the scope of work and/or the Report of Subsurface Evaluation and Geotechnical Evaluation prepared by Catawba Valley Engineering and Testing during the contract period of 60 consecutive calendar days.**

Pursuant to the Mitchell County Flood Damage Prevention Ordinance, it shall be the duty of the permit holder to submit to the Floodplain Administrator the Elevation/Floodproofing Certification within 21 calendar days after establishment of the lowest floor.

All buildings or structures shall be located landward of the first line of stable natural vegetation and comply with all applicable CAMA setback requirements.

Fill material shall not encroach into the floodway of Cane Creek. Proper Erosion and Sediment control measures shall be installed and maintained in accordance with North Carolina State Standards during fill operations.

Mobile/Manufactured home shall be installed in accordance with the Mitchell County Flood Damage Prevention Ordinance Upon completion of foundation construction, contact Floodplain Administrator's office for foundation inspection.

Failure to comply with the Mitchell County Flood Damage Prevention Ordinance including any modifications and/or performance reservations could result in assessment of civil penalties or initiation of civil or criminal court actions

Issued this 11TH day of May, 2023.

Signed: 

Kolby Silver

Floodplain Administrator for Mitchell County