

January 11, 2023



ODOT District 11  
2201 Reiser Ave. SE  
New Philadelphia, OH 44663

Attn: Mr. Timothy E. Stillion, P.E.  
P: (303) 308-6936  
E: Tim.Stillion@dot.ohio.gov

Re: Task Order Proposal for Geotechnical Engineering Services  
BEL-147-24.65/25.88, PID 118147 - Slide Repair  
Jacobsburg, Belmont County, Ohio  
Terracon Proposal No. PN4225522

Dear Mr. Stillion:

We appreciate the opportunity to submit this proposal to ODOT District 11 to provide Geotechnical Engineering services for the above referenced project. The following are exhibits to the attached Agreement for Services.

|           |                                   |
|-----------|-----------------------------------|
| Exhibit A | Project Understanding             |
| Exhibit B | Scope of Services                 |
| Exhibit C | Compensation and Project Schedule |
| Exhibit D | Site Location Plan                |
| Exhibit E | Anticipated Exploration Plan      |
| Exhibit F | ODOT Cost Proposal                |

Our total base fee to perform the Scope of Services described in this proposal is **\$16,784**. See **Exhibit C** and **Exhibit F** for more details of our fees. These services will be provided under ODOT Agreement No. 36285 dated October 5, 2021. Authorization to proceed in accordance with this task order proposal can be provided by ODOT's written notice to proceed. This proposal is valid only if authorized within 60 days from the listed proposal date.

Sincerely,  
**Terracon Consultants, Inc.**

Bijoy K Halder, PhD, P.E.  
Project Engineer

Kevin M. Ernst, P.E.  
Principal | Regional Manager

## Proposal for Geotechnical Engineering Services

BEL-147-24.65/25.88, PID 118147 - Slide Repair ■ Jacobsburg, Belmont County, Ohio

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## EXHIBIT A - PROJECT UNDERSTANDING

Our Scope of Services is based on our understanding of the project as described by ODOT District 11 and the expected subsurface conditions as described below. We **have not visited** the project site to confirm the information provided. Aspects of the project, undefined or assumed, are **highlighted as shown below**. We request the design team verify all information prior to our initiation of field exploration activities.

### Site Location and Anticipated Conditions

| Item  | Description  |
|---|--|
| Parcel Information                          | The project site is at Jacobsburg Key Road (near milepost 25.88), approximately about 0.2 miles northwest of the intersection with Pertican Road in Jacobsburg, Belmont County, Ohio.<br>The center of the site is at approximately: 39.9755°, -80.8802°.  |
| Existing Improvements                       | Asphalt pavement   |
| Existing Topography<br>(from Google Earth™) | The existing ground is sloped upward from south to north with surface elevations ranging from approximately EL. 1290 feet to EL. 1294 feet. The site has an existing slope along west side of the existing roadway, and sloped downward from an approximate elevation of EL.1292 feet to EL.1260 feet. |
| Site Access                                 | <b>We expect the site, and all exploration locations, are accessible with our ATV/truck or track mounted drilling equipment.</b>   |
| Expected Subsurface Conditions              | Our experience near the vicinity of the proposed development or geologic maps indicates subsurface conditions consist of silt loam deposits overlying mudstone and shale bedrock. Bedrock depth is anticipated between depths of approximately 15 to 20 feet below existing grades.                    |

### Planned Construction

Based on the information provided in ODOT's document titled "Request for Task Order Proposal" dated December 2, 2022, the site is experiencing ongoing slope failure. The proposed repair option is anticipated to be the construction of drilled shaft wall.

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## EXHIBIT B - SCOPE OF SERVICES

Our proposed Scope of Services consists of field exploration, laboratory testing, and engineering/project delivery. These services are described in the following sections.

### Field Exploration

ODOT District 11 prescribed the following boring locations and depths for the location BEL-147-25.88. It was indicated in the RFP that no borings are required for the location BEL-147-24.65.

| Boring ID <sup>2</sup> | Planned Exploration (feet) <sup>1</sup> | Estimated Overburden Drilling (lf) | Estimated Rock Coring (lf) |
|------------------------|---|------------------------------------|----------------------------|
| B-001                  | 30                                      | 20                                 | 10                         |
| B-002                  | 30                                      | 20                                 | 10                         |
| B-003                  | 30                                      | 20                                 | 10                         |

1. Below ground surface.

2. Refer to **Exhibit E**. The borings are located along the edge of the slipped roadway.

It is estimated that approximately 90 lineal feet of drilling would be required for this project, with approximately 60 lineal feet of overburden soil drilling and 30 feet of rock coring. However, additional drilling may be required depending on the subsurface conditions.

**Boring Layout and Elevations:** We have assumed that District 11 Engineer's Office will mark the boring locations. Approximate ground surface elevations of the borings will be obtained by interpolation between ground surface contours on a topographic survey plan, if available. Otherwise, we will estimate ground surface elevations based on satellite imagery. We have assumed that District 11 Engineer's Office will survey the drilled boring locations and provide the coordinates and elevations to Terracon.

**Subsurface Exploration Procedures:** Please note that the drilling footage presented in the above table is estimated. The actual drilling footage will be determined by the project geotechnical engineer based on conditions encountered in the field and the boring termination criteria of the ODOT's Specifications for Geotechnical Explorations (SGE).

For retaining walls more than 8 feet high, the borings will be extended below the estimated bottom of the wall face through soft or loose strata 20 feet into very stiff or medium dense soils requiring not less than 16 blows per foot or having an estimated undrained shear strength >2.0 ksf, but not less than 1.5 times the wall height. For borings that encounter bedrock above the estimated bottom of the wall face, core bedrock to a depth of 10 feet below the estimated bottom of the wall

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face. For borings that encounter bedrock below the estimated bottom of the wall face, extend the boring 10 feet into bedrock. For retaining walls which have a drilled-in foundation, such as soldier pile and drilled shaft wall types, extend the borings to a depth below the bottom of the wall face equal to the wall height whether bedrock is encountered or not.

All the borings will be advanced with an ATV- or truck-mounted rotary drill rig using continuous flight augers (solid-stem and/or hollow-stem as necessary depending on soil conditions). SPT soil samples using 18-inch split spoon will be obtained at 2.5 feet interval in the upper 20 feet of the boring and every 5 feet interval thereafter per ODOT SGE sampling specifications. Soil sampling is typically performed using thin-wall tube and/or split-barrel sampling procedures. Split-barrel sampling will be performed using a standard 2-inch outer diameter split-barrel sampling spoon that will be driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, will be indicated on the boring logs at the depths where they are performed. The samples will be classified in the field, placed in appropriate containers, taken to our soil laboratory for testing, and reviewed by a Geotechnical Engineer. Thin-walled tube sampling procedures may be performed if soil conditions are conducive for sampling. Thin-walled tube samples would be obtained by hydraulically pushing a seamless steel tube with a sharp cutting edge into the soil to obtain a relatively undisturbed sample.

Upon encountering bedrock or refusal-to-drilling conditions prior to planned depth within borings, rock coring (using NQ/NX rock core barrel) will be performed up to a minimum of 10 feet within bedrock. Water will be used as a drilling fluid for rock coring, and the spent water will be discharged on site.

Groundwater observations will be recorded in the field for the borings and noted on the boring logs. Groundwater levels will be recorded in the borings during drilling and upon completion of drilling. Upon completion of groundwater level measurements, the boreholes will be backfilled following ODOT borehole abandonment procedures per SGE. To better evaluate groundwater conditions, delayed groundwater readings could be obtained for an additional fee and are not included in proposed scope of services.

Our exploration team will prepare field boring logs as part of standard drilling operations including sampling depths, penetration distances, and other relevant sampling information. Field logs include visual classifications of materials encountered during drilling, and our interpretation of subsurface conditions between samples. Final boring logs, prepared from field log, represent the Geotechnical Engineer's interpretation, and include modifications based on observations and laboratory tests.

**Property Disturbance:** Boring will be backfilled following ODOT borehole abandonment procedures per SGE. Proposed boring will be offset based on the site access and to avoid utilities. We will perform traffic control services based on the rates provided in Exhibit C. We also assume

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no pavement cores will be required during drilling operations of the proposed borings. Our base scope of services does not include repair of the site beyond backfilling our boreholes. Excess auger cuttings will be dispersed in the general vicinity of the borehole. The Client should understand that some settlement of the borehole fill may occur. No future maintenance or filling of the holes is included in our fee.

**Site Access:** Items to be provided by the Client include the right of entry to conduct the exploration and an awareness and/or location of any private subsurface utilities existing at the sites. Also, if there are any other restrictions or special requirements regarding the sites or exploration, Terracon should be made aware of prior to commencing the subsurface exploration. We will apply for soil boring permit using ODOT's e-permitting system for all borings performed within the ODOT's right-of-way. It is our understanding that all borings are within District 11 right of way. Terracon will maintain traffic control while performing field exploration within Jacobsburg Key Road.

### Safety

This proposal assumes that no environmental concerns or hazards are present at the site and all field activity will be performed in Level 'D' personal protective equipment. If this assumption is not correct, it will be necessary for us to evaluate the nature of the contamination and modify our site-specific safety plan to address the contamination issues for the protection of our employees. Any fees associated with or consequential to the preparation and implementation of the site-specific health and safety plan (e.g., monitoring equipment, personal protective equipment beyond Level 'D', special handling and disposal of drill spoils, decontamination, etc.) would be in addition to our fee described below. Our scope of services does not include environmental site assessment services, but identification of unusual or unnatural materials encountered while drilling will be noted on our logs and discussed in our report.

Other than obtaining District 11 right-of-way work permit, Client shall secure all necessary site related approvals, permits, licenses, and consents necessary to commence and complete the Services and will execute any necessary site access agreement. Terracon will be responsible for supervision and site safety measures for its own employees but shall not be responsible for the supervision or health and safety precautions for any third parties, including Client's contractors, subcontractors, or other parties present at the site.

In addition, Terracon retains the right to stop work without penalty at any time Terracon believes it is in the best interests of Terracon's employees or subcontractors to do so in order to reduce the risk of exposure to the coronavirus. Client agrees it will respond quickly to all requests for information made by Terracon related to Terracon's pre-task planning and risk assessment processes. Client acknowledges its responsibility for notifying Terracon of any circumstances that present a risk of exposure to the coronavirus or individuals who have tested positive for COVID-19 or are self-quarantining due to exhibiting symptoms associated with the coronavirus.

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### Utility Clearances

Terracon will contact Ohio811 to mark out public utilities before the start of our field exploration program. It should be noted that OUPS requires a minimum of two business days (Monday through Friday) to locate utilities. Locating private utilities is the responsibility of the owner. Terracon will not be responsible for any damage to utilities not marked or improperly located.

### Laboratory Testing

A laboratory testing program will be initiated and include visual classification in accordance with ODOT SGE. Laboratory testing might include but not limited to gradation, Atterberg limits, hand penetrometer tests, moisture content tests and unconfined compression strength tests performed on select soil and rock samples. The test boring logs will be reclassified using ODOT standards by the project geotechnical engineer using the lab testing data, review of the soil samples, and notes recorded by the drill foreman. The laboratory testing will be performed under the supervision of the laboratory manager.

All samples will be retained by Terracon for a period of 60 days following the submission of our geotechnical engineering report.

### Engineering and Project Delivery

Results of our field and laboratory programs will be evaluated by a professional engineer. The engineer will develop a geotechnical site characterization, perform the engineering calculations necessary to evaluate foundation alternatives, and develop appropriate geotechnical engineering design criteria for earth-related phases of the project.

Your project will be delivered using our [GeoReport®](#) system. Upon initiation, we provide you and your design team the necessary link and password to access the website (if not previously registered). Each project includes a calendar to track the schedule, an interactive site map, a listing of team members, access to the project documents as they are uploaded to the site, and a collaboration portal. The typical delivery process includes the following:

- Project Planning – Proposal information, schedule and anticipated exploration plan will be posted for review and verification
- Site Characterization – Findings of the site exploration
- Geotechnical Engineering – Recommendations and geotechnical engineering report

When services are complete, we upload a printable version of our completed geotechnical engineering report, including the professional engineer's seal and signature, which documents our services. Previous submittals, collaboration and the report are maintained in our system. This allows future reference and integration into subsequent aspects of our services as the project goes through final design and construction.

## **Proposal for Geotechnical Engineering Services**

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The geotechnical engineering report will follow ODOT SGE requirements and will provide the following:

- Boring logs with field and laboratory data
- Stratification based on visual soil classification
- Groundwater levels observed during and after the completion of drilling
- Site Location and Exploration Plans
- Subsurface exploration procedures
- Description of subsurface conditions
- Subgrade preparation and earthwork recommendation
- Recommended lateral earth pressure design parameters
- Recommended soil and rock design parameters for retaining wall

In addition to providing the geotechnical engineering report, we will also provide the following services:

- Terracon will review stage 2 and final plan sets when made available in accordance with the geotechnical engineering report and issue a review letter certifying it.



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## EXHIBIT C - COMPENSATION AND PROJECT SCHEDULE

### Compensation

Based upon our understanding of the site, the project as summarized in **Exhibit A**, and our planned Scope of Services outlined in **Exhibit B**, our base fee is shown in the following table. A further breakdown of our cost estimate is provided in **Exhibit F**.

| Base Scope of Services Description                    | Estimated Fee   |
|---|-----------------|
| JEF-7-3103 Bridge Structure (Geotechnical Evaluation) | \$13,744        |
| Traffic Control Services                              | \$3,040         |
| <b>TOTAL FOR BASE SCOPE OF SERVICES<sup>1,2</sup></b> | <b>\$16,784</b> |

1. We assume geotechnical evaluation for BEL-250 and BEL-147 projects will be authorized together.

2. We assumed two day of traffic control services are required to perform drilling safely.

The total estimated fee provided in here is for reference only, our base scope of services will be performed based on the unit rates provided in the ODOT cost proposal attached in **Exhibit F** and not on a lumpsum fee basis.

Additional fees would apply for **traffic control** and **drilling services** in excess of the amount associated with the above estimated fee. Unit rates for additional mobilizations, drilling, sampling, rock coring, and traffic control would be consistent with unit rates presented in **Exhibit F**. We would submit a supplemental proposal to ODOT requesting authorization to proceed with additional services beyond those presented in our base scope of services.

We have assumed 2 virtual meetings and about 4 hours to respond for RFI's in our base scope of services. If additional meeting attendance or consultation services are requested and/or necessary, beyond the engineering report preparation, they will be provided in accordance with the unit rates presented below. Please note that any additional meetings/consultation beyond budgeted quantities in our estimated total fee above would only be invoiced for the services actually performed. In addition, we have assumed that public space permit or any other permits will be obtained by others for this project. If any of the aforementioned services are required, they will be provided based on our labor rates presented in the ODOT Proposal Spreadsheet attached as **Exhibit F**.

Unless instructed otherwise, we will submit our invoice(s) to the address shown at the beginning of this proposal. If conditions are encountered that require scope of work revisions and/or result in higher fees, we will contact you for approval, prior to initiating these services. A supplemental proposal stating the modified scope of services as well as its effect on our fee will be prepared. We will not proceed without ODOT's prior authorization.



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Our scope of services does not include services associated with site clearing, wet ground conditions, tree or shrub clearing, or repair of/damage to existing landscape or crops. If such services are desired by the owner/client, we should be notified so we can adjust our scope of services.

### Project Schedule

We developed a schedule to complete the Scope of Services based upon our existing availability and understanding of your project schedule. However, this does not account for delays in field exploration beyond our control, such as weather conditions, permit delays, or lack of permission to access the exploration locations. In the event the schedule provided is inconsistent with your needs, please contact us so we may consider alternatives.

| <b>GeoReport® Delivery</b> | <b>Approximate Posting from Notice to Proceed <sup>1</sup></b> |
|----------------------------|--|
| Project Planning           | 1 to 2 weeks   |
| Field Exploration Work     | 3 to 4 weeks   |
| Laboratory Testing         | 4 to 5 weeks   |
| Report                     | 5 to 6 weeks   |

1. In the event of a need to modify the schedule, the schedule will be updated to maintain a current awareness of our plans for delivery.

## EXHIBIT D – SITE LOCATION

BEL-147-24.65/25.88, PID 118147 - Slide Repair ■ Jacobsburg, Belmont County, Ohio  
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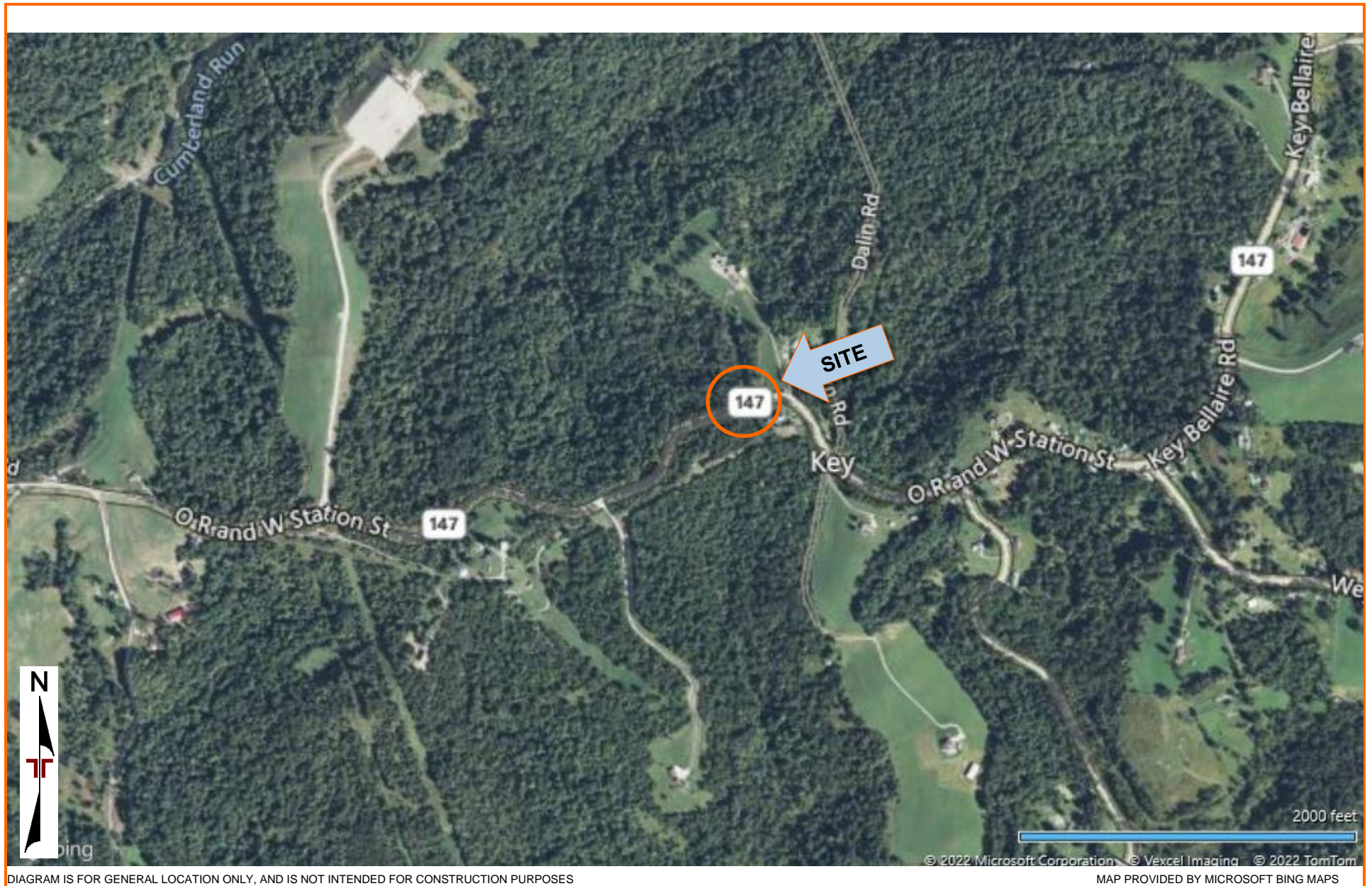


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS



**EXHIBIT E – ANTICIPATED EXPLORATION PLAN**

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS



*OHIO DEPARTMENT OF TRANSPORTATION*  
*OFFICE OF GEOTECHNICAL ENGINEERING*

*PROPOSAL*  
*for the*  
*GEOTECHNICAL EXPLORATION*

**BEL - 147-24.65/25.88**

**PID-118147**

**SLIDE REPAIR**

***TERRACON CONSULTANTS INC***

Prepared By: **Bijoy K. Halder**

Date prepared: **January 12, 2023**

**Terracon Consultants, Inc  
800 Morrison Road  
Columbus, OH 43230**

**Phone: (614) 328 -1197  
bkhalder@terracon.com**

| GEOTECHNICAL EXPLORATION PROPOSAL      |                          |                      |                    |                | COST SUMMARY                            |                    |               |         |            |                       |       |
|--|--------------------------|----------------------|--------------------|----------------|---|--------------------|---------------|---------|------------|-----------------------|-------|
| C/R/S :                                | BEL - 147-24.65/25.88    |                      |                    |                | Overhead Percentage =                   |                    |               |         | 198.14%    |                       |       |
| PID NO.:                               | PID-118147               |                      |                    |                | ODOT Statewide Percentage for Net Fee = |                    |               |         | 157.25%    |                       |       |
| CONSULTANT:                            | TERRACON CONSULTANTS INC |                      |                    |                | Net Fee Percentage =                    |                    |               |         | 11.00%     |                       |       |
| DATE:                                  | January 12, 2023         |                      |                    |                | Cost of Money =                         |                    |               |         | 1.07%      |                       |       |
| Task                                   | Hourly Rate              | Total Hours          | Direct Labor Costs | Overhead Costs | Cost of Money                           | Other Direct Costs | Subcon. Costs | Net Fee | Total Cost | Percent of Total Cost |       |
| RECONNAISSANCE AND PLANNING            |                          |                      |                    |                |   |                    |               |         |            |                       |       |
| Office Reconnaissance                  | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    |               | \$0     | \$0        |                       |       |
| Field Reconnaissance                   | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    |               | \$0     | \$0        |                       |       |
| Exploration Plan                       | \$42.77                  | 7                    | \$278              | \$551          | \$3                                     | \$0                | \$0           | \$79    | \$911      |                       |       |
| Subtotal                               | \$42.77<br>Avg. Rate     | 7                    | \$278              | \$551          | \$3                                     | \$0                | \$0           | \$79    | \$911      | 5%                    |       |
| FIELD COORDINATION                     |                          |                      |                    |                |   |                    |               |         |            |                       |       |
| Field Coordination                     | \$43.67                  | 3                    | \$131              | \$260          | \$1                                     | \$3,040            |               | \$37    | \$3,469    | 21%                   |       |
| Logging (if drilling is subcontracted) | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     | \$0                |               | \$0     | \$0        | 0%                    |       |
| Subtotal                               | \$43.67<br>Avg. Rate     | 3                    | \$131              | \$260          | \$1                                     | \$3,040            |               | \$37    | \$3,469    |                       |       |
| FIELD EXPLORATION                      |                          |                      |                    |                |   |                    |               |         |            |                       |       |
| Subtotal                               |                          |                      |                    |                |   |                    | \$0           |         | \$6,580    | 39%                   |       |
| LABORATORY TESTING                     |                          |                      |                    |                |   |                    |               |         |            |                       |       |
| Subtotal                               |                          |                      |                    |                |   |                    | \$0           |         | \$1,893    | 11%                   |       |
| GEOTECHNICAL EXPLORATION REPORT        |                          |                      |                    |                |   |                    |               |         |            |                       |       |
| Subgrade and Roadway                   | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     | \$0                | \$0           | \$0     | \$0        |                       |       |
| Bridge                                 | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    | \$0           | \$0     | \$0        |                       |       |
| Slide Repair                           | \$40.68                  | 30                   | \$1,200            | \$2,378        | \$13                                    |                    | \$0           | \$340   | \$3,931    |                       |       |
| Geohazard (describe)                   | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    | \$0           | \$0     | \$0        |                       |       |
| Stage 2 Plan Review                    | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    | \$0           | \$0     | \$0        |                       |       |
| Final Plan Review                      | \$0.00                   | 0                    | \$0                | \$0            | \$0                                     |                    | \$0           | \$0     | \$0        |                       |       |
| Subtotal                               | \$40.68<br>Avg. Rate     | 30                   | \$1,200            | \$2,378        | \$13                                    | \$0                | \$0           | \$340   | \$3,931    | 23%                   |       |
|  |                          |                      |                    |                |   |                    |               |         |            | Cost per foot*        |       |
| GRAND TOTAL ALL PARTS                  | Total                    | \$41.26<br>Avg. Rate | 39                 | \$1,609        | \$3,189                                 | \$17               | \$3,040       | \$0     | \$456      | \$16,784              | \$186 |

\*Cost per foot does not include sub-contracted traffic maintenance

| GEOTECHNICAL EXPLORATION PROPOSAL      |                          |                  | LABOR HOURS  |                 |                  |            |           |           |             |             |
|--|--------------------------|------------------|--|-----------------|------------------|------------|-----------|-----------|-------------|-------------|
| C/R/S :                                | BEL - 147-24.65/25.88    |                  | <div>HOURLY RATES</div> <div><div>Personnel Category</div><div>Salary Rate</div></div> <div>Manager, P.E. \$65.10</div> <div>Project Engineer, P.E. \$45.99</div> <div>Staff Engineer \$37.28</div> <div>CADD Technician \$32.83</div> <div>Field Supervisor \$39.33</div> <div>Technician \$22.22</div> <div>Geologist \$30.42</div> <div>Secretary \$30.70</div> |                 |                  |            |           |           |             |             |
| PID NO.:                               | PID-118147               |                  |  |                 |                  |            |           |           |             |             |
| CONSULTANT:                            | TERRACON CONSULTANTS INC |                  |  |                 |                  |            |           |           |             |             |
| DATE:                                  | January 12, 2023         |                  |  |                 |                  |            |           |           |             |             |
| HOURS BY PERSONNEL CATEGORY            |                          |                  |  |                 |                  |            |           |           |             |             |
| Task                                   | Manager                  | Project Engineer | Staff Engineer   | CADD Technician | Field Supervisor | Technician | Geologist | Secretary | Total Hours | Labor Costs |
| RECONNAISSANCE AND PLANNING            |                          |                  |  |                 |                  |            |           |           |             |             |
| Office Reconnaissance                  | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Field Reconnaissance                   | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Exploration Plan                       | 0.5                      | 2                | 2  | 0               | 2                | 0          | 0         | 0         | 6.5         | \$278       |
| Subtotal                               | 0.5                      | 2                | 2  | 0               | 2                | 0          | 0         | 0         | 6.5         | \$278       |
| FIELD COORDINATION                     |                          |                  |  |                 |                  |            |           |           |             |             |
| Field Coordination                     | 0                        | 2                | 0  | 0               | 1                | 0          | 0         | 0         | 3           | \$131       |
| Logging (if drilling is subcontracted) | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Subtotal                               | 0                        | 2                | 0  | 0               | 1                | 0          | 0         | 0         | 3           | \$131       |
| GEOTECHNICAL EXPLORATION REPORT        |                          |                  |  |                 |                  |            |           |           |             |             |
| Subgrade and Roadway                   | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Bridge                                 | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Slide Repair                           | 1.5                      | 8                | 18   | 1               | 0                | 0          | 0         | 1         | 29.5        | \$1,200     |
| Geohazard (describe)                   | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Stage 2 Plan Review                    | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Final Plan Review                      | 0                        | 0                | 0  | 0               | 0                | 0          | 0         | 0         | 0           | \$0         |
| Subtotal                               | 1.5                      | 8                | 18   | 1               | 0                | 0          | 0         | 1         | 29.5        | \$1,200     |
| LABOR TOTAL ALL PARTS                  | Total                    | 2                | 12   | 20              | 1                | 3          | 0         | 0         | 39          | \$1,609     |

| GEOTECHNICAL EXPLORATION PROPOSAL                |                          |           |            | FIELD EXPLORATION |   |
|--|--------------------------|-----------|------------|-------------------|---|
| C/R/S :  | BEL - 147-24.65/25.88    |           |            |                   |   |
| PID NO.:   | PID-118147               |           |            |                   |   |
| CONSULTANT:                                      | TERRACON CONSULTANTS INC |           |            |                   |   |
| DATE:  | January 12, 2023         |           |            |                   |   |
| Task   | Quantity                 | Unit      | Unit Cost  | Cost              | Task Description  |
| Mobilization/Demobilization                      | 1                        | lump      | \$1,500.00 | \$1,500           | Getting the necessary equipment and personnel to and from the project site. Includes crew travel time and mileage to and from the site, at the start and upon completion.   |
| Subtotal   |                          |           |            | \$1,500           |   |
| Traffic Maintenance                              |                          |           |            |                   | Describe each traffic control set-up, as referenced in the Ohio Manual of Uniform Traffic Control Devices, by the Typical Application No. Includes all flaggers, law enforcement, per-diem, mileage, and equipment and personnel to set-up, maintain, and tear down traffic control zones   |
| Typical Application No.                          |                          | days      |            | \$0               |   |
| Typical Application No.                          |                          | days      |            | \$0               |   |
| Railroad Traffic Control                         |                          | days      |            | \$0               |   |
| Subtotal   |                          |           |            | \$0               |   |
| Subsurface Exploration                           |                          |           |            |                   | Includes all necessary equipment, materials, and personnel to move equipment and crew between borings, set-up, drill, sample, supply water, perform visual descriptions of rock samples, prepare field logs, backfill borehole, and contain, preserve and transport samples. All drilling footage measured from the ground surface or the bottom of the body of water, as applicable. |
| Hand Sampling                                    |                          |           |            |                   | Includes all equipment and personnel to excavate, sample, log and backfill each hand sampling method  |
| Method Description                               |                          | feet      |            | \$0               |   |
| Method Description                               |                          | feet      |            | \$0               |   |
| Test Pits  |                          | each      |            | \$0               | Includes all equipment and personnel to excavate, sample, log and backfill test pit   |
| Pavement/Bridge Deck Coring                      |                          |           |            |                   | Includes all equipment, personnel, and material to core and patch pavement/bridge deck and either handle or dispose of core.  |
| Core Diameter                                    |                          | in.       |            |                   |   |
|  |                          | each      |            | \$0               |   |
| Core Diameter                                    |                          | in.       |            |                   |   |
|  |                          | each      |            | \$0               |   |
| Truck/ATV/Trailer Mounted Rotary Drilling        |                          |           |            |                   | Includes all methods of rotary drilling on land, except skid rig  |
| Number of Drill Rig Days                         | 1.5                      | days      |            |                   |   |
| Total Soil Footage (ft)                          | 60                       | 40 ft/day |            |                   |   |
| Total Rock Footage (ft)                          | 30                       | 20 ft/day |            |                   |   |
| No Sampling                                      |                          | feet      |            | \$0               |   |
| 5-ft SPT   | 0                        | feet      |            | \$0               |   |
| 2.5-ft SPT                                       | 60                       | feet      | \$32.00    | \$1,920           |   |
| Continuous SPT                                   |                          | feet      |            | \$0               |   |
| Undisturbed Samples                              | 1                        | each      | \$60.00    | \$60              |   |
| Rock Coring                                      | 30                       | feet      | \$60.00    | \$1,800           |   |
| Permanent Borehole Sealing                       | 90                       | feet      | \$11.00    | \$990             |   |
| Skid Drilling                                    |                          |           |            |                   |   |
| Number of Drill Rig Days                         |                          | days      |            |                   |   |
| Total Soil Footage (ft)                          | 0                        | 0 ft/day  |            |                   |   |
| Total Rock Footage (ft)                          | 0                        | 0 ft/day  |            |                   |   |
| No Sampling                                      |                          | feet      |            | \$0               |   |
| 5-ft SPT   |                          | feet      |            | \$0               |   |
| 2.5-ft SPT                                       |                          | feet      |            | \$0               |   |
| Continuous SPT                                   |                          | feet      |            | \$0               |   |
| Undisturbed Samples                              |                          | each      |            | \$0               |   |
| Rock Coring                                      |                          | feet      |            | \$0               |   |
| Permanent Borehole Sealing                       |                          | feet      |            | \$0               |   |
| Barge Drilling                                   |                          |           |            |                   | Includes press, preservation, transport, and extraction, minimum 50% recovery   |
| Number of Drill Rig Days                         |                          | days      |            |                   |   |
| Total Soil Footage (ft)                          | 0                        | 0 ft/day  |            |                   |   |
| Total Rock Footage (ft)                          | 0                        | 0 ft/day  |            |                   |   |
| 5-ft SPT   |                          | feet      |            | \$0               |   |
| 2.5-ft SPT                                       |                          | feet      |            | \$0               |   |
| Continuous SPT                                   |                          | feet      |            | \$0               |   |
| Undisturbed Samples                              |                          | each      |            | \$0               |   |
| Rock Coring                                      |                          | feet      |            | \$0               |   |
| Permanent Borehole Sealing                       |                          | feet      |            | \$0               |   |
| Barge  |                          | days      |            | \$0               |   |
| Other Exploratory Methods                        |                          |           |            |                   |   |
| Method Description                               |                          | days      |            | \$0               |   |
| Method Description                               |                          | days      |            | \$0               |   |
| In-situ Testing                                  |                          |           |            |                   | Includes all mobilization/demobilization, equipment, material, labor, travel, per diem, calibration, and data reduction   |
| Test:  |                          | days      |            | \$0               |   |
| Test:  |                          | days      |            | \$0               |   |
| Installation/Reading of Geotechnical Instruments |                          |           |            |                   | Excludes cost of drilling - present above. Includes all material and labor for installation   |
| Open Standpipe Piezometer                        |                          | feet      |            | \$0               |   |
| Monitoring Well                                  |                          | feet      |            | \$0               | pneumatic or vibrating wire piezometers, strain gages, extensometers, TDR cable, etc.   |
| Inclinometer                                     |                          | feet      |            | \$0               |   |
| Misc (describe)                                  |                          |           |            |                   | Includes all equipment, material, labor, travel, per diem, calibration, and data reduction  |
|  |                          | each      |            | \$0               |   |
| Instrument Readings                              |                          | trips     |            | \$0               |   |
| Subtotal   |                          |           |            | \$4,770           |   |
| Direct Costs                                     |                          |           |            |                   |   |
| Drill Crew Meals and Lodging                     | 1                        | night     | \$310.00   | \$310             |   |
| Other (describe)                                 |                          |           |            | \$0               |   |
| Subtotal   |                          |           |            | \$310             |   |
| FIELD EXPLORATION TOTAL ALL PARTS                |                          |           | Total      | \$6,580           |   |



| GEOTECHNICAL EXPLORATION PROPOSAL  |   |             |                 | LABORATORY TESTING |          |           |         |  |
|------------------------------------|---|-------------|-----------------|--------------------|----------|-----------|---------|--|
| C/R/S :                            | BEL - 147-24.65/25.88   |             |                 |                    |          |           |         |  |
| PID NO.:                           | PID-118147  |             |                 |                    |          |           |         |  |
| CONSULTANT:                        | TERRACON CONSULTANTS INC  |             |                 |                    |          |           |         |  |
| DATE:                              | January 12, 2023  |             |                 |                    |          |           |         |  |
|                                    | Test  | Test Method |                 | Quantity           | Unit     | Unit Cost | Cost    | Remarks  |
|                                    |   | AASHTO      | ASTM            |                    |          |           |         |  |
| Soil Testing                       |   |             |                 |                    |          |           |         |  |
|                                    | Complete Classification   | Multiple    | Multiple        | 6                  | each     | \$199     | \$1,194 | Includes Visual Description per SGE Section 602, T265, T88, T89, T90 |
|                                    | Water Content Test and Visual Description   | T265        | D2216           | 25                 | each     | \$16      | \$388   | Visual Description per SGE Section 602                               |
|                                    | Particle Size Analysis - Sieve Only   | T88         | D422            | 0                  | each     | \$86      | \$0     | As modified per SGE Section 603.3                                    |
|                                    | Particle Size Analysis - Sieve and 2-hour Hydrometer                              | T88         | D422            | 0                  | each     | \$113     | \$0     | As modified per SGE Section 603.3                                    |
|                                    | Liquid Limit Test   | T89         | D4318           | 0                  | each     | \$44      | \$0     | As modified per SGE Section 603.3                                    |
|                                    | Plastic Limit Test  | T90         | D4318           | 0                  | each     | \$43      | \$0     | As modified per SGE Section 603.3                                    |
|                                    | Organic Content by Loss on Ignition   | T267        | D2974           | 0                  | each     | \$60      | \$0     |  |
|                                    | Soil Unconfined Compression Test  | T208        | D2166           | 1                  | each     | \$91      | \$91    |  |
|                                    | Unconsolidated-Undrained Triaxial Compression Test                                | T296        | D2850           | 0                  | 1 point  | \$193     | \$0     |  |
|                                    | Consolidated-Undrained Triaxial Compression Test (with pore pressure measurement) | T297        | D4767           | 0                  | 3 points | \$1,032   | \$0     |  |
|                                    | One-Dimensional Consolidation Test  | T216        | D2435           | 0                  | each     | \$585     | \$0     |  |
|                                    | Specific Gravity Test   | T100        | D854            | 0                  | each     | \$76      | \$0     |  |
|                                    | Direct Shear Test   | T236        | D3080           | 0                  | 3 points | \$580     | \$0     |  |
|                                    | Sulfate Content in Soils, Colorimetric Method                                     | ODOT S1122  | NA              | 0                  | each     | \$117     | \$0     |  |
|                                    | Misc. (identify test)   |             |                 | 0                  |          |           | \$0     | Identify the test and test method for any tests not listed above     |
|                                    | Misc. (identify test)   |             |                 | 0                  |          |           | \$0     | Identify the test and test method for any tests not listed above     |
| Subtotal                           |   |             |                 |                    |          |           | \$1,673 |  |
| Rock Testing                       |   |             |                 |                    |          |           |         |  |
|                                    | Unconfined Compressive Strength of Intact Rock Core Specimen                      | NA          | D7012, Method C | 2                  | each     | \$110     | \$220   |  |
|                                    | Slake Durability of Shales and Similar Weak Rocks                                 | NA          | D4644           | 0                  | each     | \$243     | \$0     |  |
|                                    | Determination of the Point Load Strength Index of Rock                            | NA          | D5731           | 0                  | each     | \$75      | \$0     |  |
|                                    | Elastic Moduli of Intact Rock Core Specimens in Uniaxial Compression              | NA          | D7012, Method D | 0                  | each     | \$278     | \$0     |  |
|                                    | Misc. (identify test)   |             |                 | 0                  |          |           | \$0     | Identify the test and test method for any tests not listed above     |
|                                    | Misc. (identify test)   |             |                 | 0                  |          |           | \$0     | Identify the test and test method for any tests not listed above     |
|                                    | Misc. (identify test)   |             |                 | 0                  |          |           | \$0     | Identify the test and test method for any tests not listed above     |
| Subtotal                           |   |             |                 |                    |          |           | \$220   |  |
| LABORATORY TESTING TOTAL ALL PARTS |   |             |                 |                    |          |           | Total   | \$1,893  |

**GEOTECHNICAL EXPLORATION PROPOSAL****DIRECT COSTS**C/R/S : **BEL - 147-24.65/25.88**PID NO.: **PID-118147**CONSULTANT: **TERRACON CONSULTANTS INC**DATE: **January 12, 2023**

| Task   | Quantity | Unit | Unit Cost    | Cost              |
|--|----------|------|--------------|-------------------|
| <b>RECONNAISSANCE AND PLANNING</b>               |          |      |              |                   |
| Mileage  | 0        |      | \$0.55       | \$0.00            |
| (describe)                                       | 0        |      | \$0.00       | \$0.00            |
| (describe)                                       | 0        |      | \$0.00       | \$0.00            |
| <b>Subtotal</b>                                  |          |      |              | <b>\$0.00</b>     |
| <b>FIELD COORDINATION</b>                        |          |      |              |                   |
| <b>Field Coordination</b>                        |          |      |              |                   |
| Meals and Lodging                                | 0        | day  | \$0.00       | \$0.00            |
| Mileage  | 0        | mile | \$0.58       | \$0.00            |
| Permits  | 0        | each | \$0.00       | \$0.00            |
| Dozer and Operator (site access and restoration) | 0        | hour | \$0.00       | \$0.00            |
| Site Restoration (not including Dozer)           | 0        | site | \$0.00       | \$0.00            |
| Railroad Permits                                 | 0        | each | \$0.00       | \$0.00            |
| Traffic Control - Surface Street Lan Closure     | 2        | day  | \$1,520.00   | \$3,040.00        |
| Other (describe)                                 | 0        |      | \$0.00       | \$0.00            |
| <b>Subtotal</b>                                  |          |      |              | <b>\$3,040.00</b> |
| <b>Logging (If drilling is subcontracted)</b>    |          |      |              |                   |
| Meals and Lodging                                | 0        | day  | \$0.00       | \$0.00            |
| Mileage  | 0        | mile | \$0.58       | \$0.00            |
| Other (describe)                                 | 0        |      | \$0.00       | \$0.00            |
| <b>Subtotal</b>                                  |          |      |              | <b>\$0.00</b>     |
| <b>Subtotal</b>                                  |          |      |              | <b>\$3,040.00</b> |
| <b>GEOTECHNICAL EXPLORATION REPORT</b>           |          |      |              |                   |
| (describe)                                       | 0        |      | \$0.00       | \$0.00            |
| (describe)                                       | 0        |      | \$0.00       | \$0.00            |
| <b>Subtotal</b>                                  |          |      |              | <b>\$0.00</b>     |
| <b>DIRECT COSTS TOTAL ALL PARTS</b>              |          |      | <b>Total</b> | <b>\$3,040.00</b> |