

Rik Kowall, Supervisor
Anthony L. Noble, Clerk
Mike Roman, Treasurer



Trustees
Scott Ruggles
Liz Fessler Smith
Andrea C Voorheis
Michael Powell

SPECIAL TOWNSHIP BOARD MEETING
LOCATION: 7525 HIGHLAND ROAD, WHITE LAKE – OLD BOARD ROOM
WEDNESDAY, JUNE 07, 2023 – 5:00 PM

White Lake Township | 7525 Highland Rd | White Lake, MI 48383 | Phone: (248) 698-3300 | www.whitelaketwp.com

AGENDA

1. **CALL TO ORDER**
2. **PLEDGE OF ALLEGIANCE**
3. **ROLL CALL**
4. **APPROVAL OF AGENDA**
5. **PUBLIC COMMENT**

6. **NEW BUSINESS**
 - A. [RESOLUTION #23-016; SPECIAL LIQUOR LICENSE APPLICATION FOR AUGUST 5, 2023 - TOWNSHIP SUMMER CONCERT @ FISK FARM](#)
 - B. [REQUEST TO APPROVE GEOTECHNICAL PROPOSAL FOR CIVIC CENTER SITE](#)

7. **ADJOURNMENT**

Procedures for accommodations for persons with disabilities: The Township will follow its normal procedures for individuals with disabilities needing accommodations for effective participation in this meeting. **Please contact the Township Clerk's office at (248) 698-3300 X-164 at least two days in advance of the meeting.** An attempt will be made to make reasonable accommodations.

WHITE LAKE TOWNSHIP TOWNSHIP BOARD

REPORT OF THE COMMUNITY DEVELOPMENT DEPARTMENT

TO: Township Board

FROM: Justin Quagliata, Staff Planner

DATE: June 6, 2023

RE: Liquor License Request (Parks and Recreation Committee)

The Parks and Recreation Committee is requesting Township Board approval to apply for a one-day liquor license to sell beer and wine at an event scheduled for Saturday, August 5, 2023 at Fisk Farm. The license type is a “Special License for Consumption on the Premises” which is issued by the Michigan Liquor Control Commission (MLCC), under authority from the Michigan Department of Licensing and Regulatory Affairs (LARA). A certified copy of a resolution of the Township Board authorizing the license request must be included in the application to the State.

For municipalities, the fee for the “Special License” is \$50. The license is valid for one day, with sales restricted to 7:00 a.m. until 2:00 a.m. The event will run from approximately 5:00 p.m. until 11:00 p.m. The Parks and Recreation Committee is prepared to provide a secure site with appropriate barriers as required by law and monitor and restrict beer/wine sales from visibly intoxicated persons and minors.

The following motion is provided for the Board’s consideration:

- **Move to approve the attached resolution supporting the application of a one-day liquor license from the Michigan Liquor Control Commission for sale of beer and wine at an event on August 5, 2023. The Supervisor, Clerk, and staff are authorized to sign the necessary documents associated with the application.**

Attachment

1. Resolution to approve license request.

**CHARTER TOWNSHIP OF WHITE LAKE
OAKLAND COUNTY, MICHIGAN**

**SPECIAL LIQUOR LICENSE APPROVAL
RESOLUTION NO. 23-016**

At a special meeting of the Township Board of the Charter Township of White Lake, County of Oakland, State of Michigan, held in the Township Annex, 7527 Highland Road, in accordance with the Open Meetings Act, Public Act 267 of 1976 as amended, on the 7th day of June, 2023 at 5:00 p.m. with those present and absent being:

PRESENT: _____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, the Parks and Recreation Committee has requested Township Board approval to apply for a one-day liquor license to sell beer and wine from the Michigan Liquor Control Commission (MLCC) at an event scheduled for Saturday, August 5, 2023 at Fisk Farm; and

WHEREAS, the Parks and Recreation Committee will operate beer and wine sales in conformance with all applicable laws as established in the provisions of the one-day liquor license.

NOW, THEREFORE, BE IT RESOLVED THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF WHITE LAKE, OAKLAND COUNTY, MICHIGAN hereby approves of applying for a one-day liquor license from the MLCC for sale of beer and wine at an event on Saturday, August 5, 2023 at Fisk Farm.

BE IT FURTHER RESOLVED the Supervisor, Clerk, and staff are authorized to sign the necessary documents associated with the application.

ADOPTED: AYES: _____

NAYS: _____

RESOLUTION DECLARED ADOPTED.

I, Anthony L. Noble, the duly elected and acting Clerk of the Charter Township of White Lake, hereby certify this to be a true and complete copy of Resolution No. 23-016, adopted at a regular meeting of the Township Board held on the 7th day of June 2023.

Anthony L. Noble, Clerk
Charter Township of White Lake

**WHITE LAKE TOWNSHIP
INTER-OFFICE MEMORANDUM
COMMUNITY DEVELOPMENT DEPARTMENT**

DATE: June 6, 2023

TO: Rik Kowall, Supervisor
Township Board of Trustees

FROM: Sean O’Neil, AICP
Community Development Director

SUBJECT: Civic Center Geotechnical Work Bid Proposals and Recommendation

Beckett and Raeder have completed the bid tabulation for the proposed geotechnical work at the future Civic Center site. They have recommended that the Township proceed with G2 Consulting based on the thoroughness of their response, demonstrated past performance, submitted price, scheduled and willingness to collaborate on cost reduction opportunities. G2 Consulting also performed the geotechnical analysis for Stanley Park and there may be additional cost efficiencies during construction as a result.

Please find enclosed the following related documents:

- Geotech proposal Summary prepared by Beckett & Raeder.
- Bid proposal from G2 Consulting.
- Bid proposal from Testing Engineers & Consultants, Inc.
- Bid proposal (via email) from SME.
- RFP for Geotechnical Investigation & Engineering Services.

Bid Tabulation & Reconciliation
Geotechnical Investigation & Engineering Services
White Lake Township Civic Center



May 24, 2023

Scope Item	G2 Consulting	Testing Engineers & Consultants, Inc.	Soils & Materials Engineers
Geotech Investigation & Report	\$ 43,075.00	\$ 35,566.00	\$ 78,200.00
Infiltration Testing	\$ 7,865.00	\$ 6,340.00	included in above
ATV Rig Upcharge	included in above	\$ 4,250.00	included in above
Submitted Bid Totals	\$ 50,940.00	\$ 46,156.00	\$ 78,200.00

	G2 Consulting	TEC	SME
Lead Time for Field Work	3-4 weeks	3-4 weeks	4-6 weeks
Duration of Field Work	12 days	10 days	10 days
Lead Time for Report	10-12 days	4 weeks	15-20 days
Offered Possible Scope Reduction Savings	Yes	No	Yes



May 23, 2023

Mr. Sean O’Neil
Community Development Director
White Lake Township
7525 Highland Road
White Lake, Michigan 48383

RE: Proposal for Geotechnical Investigation and Infiltration Evaluation
White Lake Civic Center Development
10785 Elizabeth Lake Road
White Lake, Oakland County, Michigan
G2 Proposal No. 233354

Dear Mr. O’Neil:

This letter will serve as our proposal and agreement to perform a geotechnical investigation associated with the proposed White Lake Township Civic Center development to be constructed within the parcel having the address listed above in White Lake, Michigan.

We understand the proposed project includes the construction of a new civic center development which will be home to the future Public Safety and Township Hall. The project includes the construction of roadways, parking, retaining walls, utilities, and stormwater management features. Project plans and specifications depicting the size, location, and/or loading conditions for the proposed site features were not available for our review at the time of this proposal.

We have previously conducted a geotechnical investigation associated with the proposed Stanley Park Improvements. The scope of our previous investigation is presented in the report titled “Report on Geotechnical Investigation - Proposed Stanley Park Improvements – G2 Project No. 213917” dated March 28, 2023. In summary, we observed layered soil deposits comprised of both granular and cohesive soils. In several of the soil boring locations, we observed the presence of highly compressible organic soils. We intend to supplement the present geotechnical investigation with subsurface soil and groundwater data obtained in our previous investigation.

Our scope of work has been prepared in general accordance with the “Request for Proposal – White Lake Township Civic Center Development – White Lake Township, Michigan” in the file labeled “WLT Civic Center_Geotech RFP.2023.pdf”. Based on the request for proposal, we understand the proposed development will be constructed in an open farm field. As such, we have budgeted for accessing the site with an all-terrain vehicle; however, our proposal does not include pricing for clearing access paths through wooded areas to proposed soil boring locations.

Our proposal also includes pricing for conducted an infiltration evaluation following and based on the results of our initial geotechnical investigation. In general, we will perform an infiltration evaluation in accordance with the Oakland County Water Resource Commissioner “Stormwater Engineering Design Standards – Requirements, Rules, and Design Criteria for Stormwater Management” dated November 22, 2021. We propose to perform infiltration testing in general accordance with the double-ring infiltrometer test, as described in the manual.



In general, our scope of work has been prepared in accordance with the request for proposal; however, we highlight the following exclusions.

- Based on our experience with the soil conditions in this region, we do not anticipate encountering soils conducive to pre-mature corrosion of ferrous building materials. As such, we have excluded the testing required to develop recommendations related to corrosion;
- Soft and compressible soils characteristic of the region are not typically suitable for the support of structures due to their compressibility; as such, we exclude the sampling operations necessary for and laboratory testing determinations related to consolidation settlement of compressible soils (ASTM D2435);
- Expansive soils are not characteristic of the project area; as such, we exclude the sampling operations necessary for and laboratory testing determinations related to the swell potential of cohesive soils (ASTM D4546).

The purpose of our investigation will be to determine and evaluate the general subsurface soil and groundwater conditions beneath specific site features, to develop recommendations for feasible foundations, and to develop soil parameters for use in the design of the proposed site features.

SCOPE OF SERVICES

Geotechnical Investigation

A licensed professional engineer acting as a Project Manager will direct the evaluation. Our proposed scope of services will consist of the following items:

1. We will locate the proposed soil boring locations using handled GPS equipment. We will estimate the GPS location of the proposed soil boring locations by overlaying the scaled site plan on aerial imagery. In our overlaying process, we will field the scaled site plan to fixed reference points at the ground level (e.g. pavement edges) and ultimately assign latitude and longitude to the borings. We will estimate the existing ground surface elevations based on available topographic data at the GPS positions.
2. We will contact the local one-call center, MISSDIG, to identify potential utility conflicts within the area of the proposed boring locations. It should be noted that MISSDIG requires a minimum of 72-hours to locate utilities. Locating private utilities is the responsibility of the client/owner. G2 will not be responsible for any damage to utilities not marked or incorrectly marked. In addition, any special access issues or requirements related to the site should be provided to G2 prior to the commencement of our work.
3. As directed, we will perform soil borings throughout the proposed development areas as presented in the following table:

Boring ID	Location	Unit Depth (feet)	No. of Borings	Total Depth (feet)
PS-01 & PS-02	Public Safety	20	2	40
PS-03 & PS-04	Public Safety	30	2	60
PS-05 - PS-09	Public Safety	35	5	175
PS-10 - PS-13	Public Safety	40	4	160
TH-01 - TH-06	Town Hall	50	6	300
TH-07 - TH-10	Town Hall	60	4	240
SB-01 - SB-04	Site Work	10	4	40
SB-05 - SB-12	Site Work	15	8	120
SB-13 - SB-14	Site Work	25	2	50
Total Vertical Drilling Depth →				1185



We will obtain soil samples at regular 2-1/2 foot intervals extending to a depth of 10 feet and at intervals of 5 feet thereafter extending to the explored depth in general accordance with the Standard Penetration Test (SPT) method (ASTM D1586). The resulting soil borings will be backfilled with auger cuttings upon completion of the field operations and capped with asphalt patch, as necessary. We will not be responsible for damage to the surrounding grade near the soil borings nor will we be responsible for settlement associated with the soil boring backfill. We will use reasonable care to minimize the impacts to the surrounding grade while performing our work.

4. We will perform laboratory testing to determine the physical characteristics of the subsurface soils. The testing program will include soil classifications in accordance with the G2 General Notes terminology and determinations in accordance with the following standards:
 - ASTM D2216 – Moisture Content of Soil
 - ASTM D2166 – Unconfined Compressive Strength
 - ASTM D4318 – Atterberg Limits
 - ASTM D422 – Sieve and Hydrometer Analysis
 - ASTM D422 – Sieve Analysis (Only)
 - ASTM D2974 – Moisture, Ash, and Organic Matter Content (Loss-on-Ignition)
 - ASTM D2488 – Unified Soil Classification (Visual-Manual Method)

5. We will prepare an engineering report summarizing our efforts and findings as well as presenting finalized evaluations, conclusions, and recommendations about the following items:
 - Existing site features, including those that could impact the proposed construction;
 - Subsurface soil conditions and groundwater level data obtained during and upon completion of drilling operations;
 - Site seismicity, including site class, seismic coefficients, and liquefaction potential;
 - Earthwork operations to prepare the site for development, including requirements for building and pavement subgrade preparation, fill and backfill materials, and placement and compaction of engineered fill;
 - Pavement design recommendation for low-volume bituminous concrete in accordance with 1993 AASHTO design procedures;
 - Stability of temporary excavations for slope cuts, borrow areas, foundations and underground utilities, including recommended slope inclinations, support of vertical excavations, and control of groundwater;
 - Appropriate foundation type(s) with allowable foundation bearing capacities of shallow foundations for different soil strata;
 - Estimates of settlement associated with foundations;
 - Preliminary considerations related to suitability of on-site soils for infiltration
 - Recommendations related to groundwater control in construction excavations, including well-point dewatering, if required;
 - Effects on adjacent structures if well-point dewatering is required;
 - Other subsurface conditions which may impact design and construction of the proposed development.

Infiltration Evaluation

1. Following the results of our mechanically advanced soil boring operations, we will contact your office and revise our proposed scope of work related to the infiltration evaluation.

2. We will locate the proposed test locations using handheld GPS equipment. We will estimate the GPS location of the proposed test locations by overlaying the scaled site plan on aerial imagery. In our overlaying process, we will field the scaled site plan to fixed reference points at the ground level (e.g. pavement edges) and ultimately assign latitude and longitude to the test locations. We will estimate the existing ground surface elevations based on available topographic data at the GPS



positions.

3. We will contact the local one-call center, MISSDIG, to identify potential utility conflicts within the area of the proposed test locations. It should be noted that MISSDIG requires a minimum of 72-hours to locate utilities. Locating private utilities is the responsibility of the client/owner. G2 will not be responsible for any damage to utilities not marked or incorrectly marked. In addition, any special access issues or requirements related to the site should be provided to G2 prior to the commencement of our work.
4. We will subcontract with a local excavation company to provide both a backhoe and operator to perform test pit excavations associated with the infiltration tests. Our scope of work includes the observation of up to four (4) test pits extending to a depth of 5 feet and two (2) test pits extending to a depth of 10 feet. The resulting test pit excavations will be backfilled in an uncontrolled manner. We will not be responsible for damage to the surrounding grade near the test pit excavations, nor will we be responsible for any settlement associated with the test pit backfill.
5. We propose to perform infiltration testing at up to six (6) locations as described in the previous paragraph. We will perform infiltration testing in locations in accordance with the “Double-ring Infiltrometer Test” listed in Section II, Part C, of the OCWRC guidance document; however, specific methodology for this test is not provided. In lieu of specific methodology, we proposed to perform the “Double-ring Infiltrometer Test” in accordance with the methodology described in Appendix E of the Southeastern Michigan Council of Governments “Low-Impact Development Manual for Michigan” dated 2008. Please note the performance of an individual infiltration test could take up to 5 to 6 hours to complete.
6. We will prepare an engineering report summarizing our efforts and findings as well as presenting finalized evaluations, conclusions, and recommendations about the following items:
 - Subsurface soil and groundwater conditions;
 - Estimated infiltration rates for the in-situ soils ;
 - Estimated groundwater levels, if encountered;
 - Suitability of in-situ soils for infiltration;
 - Other subsurface conditions at the site that may impact design and construction of the proposed infiltration structure(s).

PROFESSIONAL FEES

We propose to perform the services outlined in this agreement for a lump sum fee broken down as follows:

Professional Fees			
Scope of Work Item	Quantity	Unit Price	Extended Price
Geotechnical Investigation and Report	1 Event	\$ 47,575.00	\$ 43,075.00
Infiltration Evaluation: Subcontracted Excavator and Operator	1 Event	\$ 3,900.00	\$ 3,900.00
Infiltration Evaluation: Mobilization, Infiltration Testing, Report	1 Event	\$ 3,965.00	\$ 3,965.00
Total →			\$ 50,940.00

This lump sum fee assumes an ATV drill rig will be required to access the site over a period of twelve (12) business days. In the event a change in the scope of our Geotechnical Investigation requires more than 12 days of drilling, we will invoice for an additional **\$625 per day** of additional drilling. If additional drilling is required due to the presence of poor soils at the boring termination depth, such as uncontrolled fill, peat, muck, marl, very loose granular soils, or very soft cohesive soils, we will extend the soil borings as necessary, and we will invoice for additional **\$25 per foot** of additional drilling.

If you require more than six (6) infiltration tests, we will contact your office with an estimate before



proceeding. In the event the soil or groundwater conditions at the desired test elevation preclude infiltration testing we will provide a credit of **\$275 per infiltration test** not performed.

The lump sum fee does not include additional meetings or consultation services. Such additional services would be charged on a time and materials basis as outlined in the attached Fee and Rate Schedule. Should you or field conditions require additional work beyond the scope outlined in this proposal, we would contact your office with an estimate and obtain your permission prior to performing such services.

PROJECT SCHEDULE

Fieldwork can be scheduled within 3 to 4 weeks for the Geotechnical Investigation and within 2 to 3 weeks for the Infiltration Evaluation from the notice to proceed, staking of the test locations, and utility clearance through the MISSDIG one-call network. We anticipate the field operations for the Geotechnical Investigation will take up twelve days to complete and the Infiltration Evaluation will take 1 to 2 days depending on the encountered soil types and provided the site and weather conditions permit. Our engineering report will be available within 10 to 12 business days following completion of the field operations; however, preliminary verbal recommendations should be available shortly after completion of the laboratory testing. We will provide a digital copy of our report in the portable document format (PDF).

TERMS AND CONDITIONS

General conditions relating to the performance of our services are presented in the attached General Conditions and are made part of this proposal. As authorization to proceed, please have one copy of this proposal executed by an authorized representative of the party responsible for payment of services and return it to G2 Consulting Group, LLC. A signed copy of this proposal must be received before work is initiated. If you prefer to issue a separate purchase order or other written authorization, please reference this proposal as part of the contract documents. The fees discussed in this proposal remain valid for a period of 60 days from the date of this proposal. After 60 days, we reserve the right to revise our fees.

(This space has been intentionally left blank.)



FEE AND RATE SCHEDULE
PROFESSIONAL SERVICES

PERSONNEL

Fees for our services will be based upon the time worked on the project by professional, technical, and clerical personnel according to the following schedule:

Table with 2 columns: Personnel Role and Rate. Roles include Principal (\$240.00), Project Consultant (\$205.00), Project Manager (\$200.00), Senior Project Engineer (\$162.00), Project Engineer (\$156.00), Senior Environmental Scientist (\$152.00), Senior Staff Engineer (\$133.00), Staff Engineer (\$114.00), Field Engineer (\$114.00), Field Coordinator* (\$110.00), Senior Technician* (\$107.00), Technician II* (\$99.00), Technician I* (\$83.00), Word Processor* (\$79.00).

*For these personnel, overtime work will be charged at a rate equal to 1.5 times the Standard Rate.

A premium of 50 percent will be added to hourly rates for expert testimony and depositions.

G2 technicians include Engineering, Environmental, and Construction Materials technical specialists.

G2 operates on a strong project management system, and a Project Manager is appointed for each project.

EXPENSES

The following expenses, when incurred in direct connection with the project, will be charged at the rate shown:

Table with 2 columns: Expense Category and Rate. Categories include Transportation, Lodging, and Subsistence for Out of Town Travel (Cost + 15%), Printing, Reproduction, Photographs, Long Distance Telephone and Telecopier Charges, Shipping Charges and Material Purchases (Cost + 15%), and Vehicle Travel for Projects (\$0.80/Mile).

SUBCONTRACTORS/SUBCONSULTANTS

On projects requiring subcontractors or subconsultants, we will obtain the services of reputable contractors or consultants to perform such work. The fees of these contractors or consultants plus a 15 % service charge will be added to our invoices.

INVOICES

Progress invoices will be submitted to the client monthly and a final bill will be submitted upon completion of our services. Invoices will show charges for different personnel and expense classifications. Each invoice is due on presentation and is past due thirty (30) days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1.5%) per month on past due accounts.

We reserve the right to suspend or terminate work under our agreement upon failure of the client to pay invoices when due.



GENERAL CONDITIONS

PUBLIC LIABILITY INSURANCE

We represent and warrant that we and our agents, staff and consultants employed by us are protected by worker's compensation insurance and that we have coverage under public liability and property damage insurance policies which we deem to be adequate. Certificates for all such policies of insurance can be provided to the client upon request. Within the limits and conditions of such insurance, we agree to indemnify and save clients harmless from and against any loss, damage or liability arising from any negligent acts by us, our agents, staff or consultants employed by us. We shall not be responsible for any loss, damage or liability beyond the amounts, limits and conditions of such insurance. We shall not be responsible for any loss, damage or liability arising from any negligent acts by our client, its agents, staff and other consultants employed by client.

LIMITATION OF PROFESSIONAL LIABILITY

In performing our professional services, we will use that degree of care and skill ordinarily exercised under similar circumstances by members of our profession. No warranty, express or implied, is made or intended by our proposal for consulting services, by our furnishing oral or written reports, or by our observation of work. Client recognizes that actual conditions may vary from those encountered at the location where borings, surveys or explorations are made by us or provided by others, and that our data, interpretations and recommendations are based solely on the information available to the client. We will be responsible for those data, interpretations and recommendations, but shall not be responsible for the interpretation by others of the information developed. Client also recognizes that monitoring of construction by a qualified engineer is essential to verify that designs are appropriate for actual site conditions.

Should we or any of our professional employees be found to have been negligent in the performance of professional services or to have made and breached any expressed or implied warranty, the client agrees that the maximum aggregate amount of our liability and/or that of said professional employees shall be limited to \$25,000.00 or the amount of the fee paid us for professional services on this project, whichever amount is greater.

WAIVER OF LIMITATION OF PROFESSIONAL LIABILITY

In the event the client is unwilling or unable to limit liability in accordance with the provisions set forth in the paragraph hereinbefore, we agree to waive this limitation upon written notice from the client received within ten (10) days after date of contract, and client agrees to pay us a sum equivalent to ten (10) percent additional of the total fee to be charged for the professional services, said sum to be called "Waiver of Limitation of Liability Charge". This charge will in no way be construed as being a charge for insurance of any type, but will be increased consideration for the greater risk involved in performing work in which there is no limitation of liability.

RIGHT OF ENTRY

The client will provide for right of our entry and all necessary equipment, in order for us to complete the work. While we will take reasonable precautions to minimize any damage to the property, it is understood by client that in the normal course of work some damage may occur, the correction of which is not part of this agreement.

DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

Client represents that client has made a reasonable effort to evaluate if hazardous materials including gases are on or near the project site, and that client has informed us of client's findings relative to the possible presence of such materials.

Hazardous materials may exist at a site where there is no reason to believe they could or should be present. We and client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work or termination of services. We and client also agree that the discovery of unanticipated hazardous materials may make it necessary for us to take immediate measures to protect health and safety. Client agrees to compensate us for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials.

We agree to notify client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold us harmless for any and all consequences of disclosures made by us which are required by governing law. In the event the project site is not owned by client, client recognizes that it is client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.



Notwithstanding any other provisions of the agreement, client waives any claim against us and, to the maximum extent permitted by law, agrees to defend, indemnify, and save us harmless from any claim, liability, and/or defense costs for injury or loss arising from our discovery of unanticipated hazardous materials or suspected hazardous materials, including, but not limited to, any costs created by delays of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by us which are found to be contaminated.

UTILITIES

In the prosecution of the work, we will take reasonable precaution to avoid damage or injury to subterranean structures or utilities. The client agrees to hold us harmless for any damages to subterranean structures which are not called to our attention and correctly shown or described on the documents furnished.

OWNERSHIP OF DOCUMENTS

All reports, drawings, plans, specifications, field data, field notes, calculations, estimates and other documents we prepare, as instruments of service, shall remain our property. Client agrees that all reports and other work furnished to the client or his agents, which is not paid for, will be returned upon demand and will not be used by the client for any purpose whatever. We will retain pertinent records relating to the services performed for a period of five (5) years following submission of the report, during which period the records will be made available to the client at reasonable times for a reasonable fee.

RESOLUTION OF DISPUTES

All claims, disputes and other matters in controversy arising out of or in any way related to this agreement will be submitted to Alternative Dispute Resolution (ADR) before and as a condition precedent to other remedies provided by law. If and to the extent we have agreed on methods for resolving such disputes, then such methods will be set forth in the "Alternate Dispute Resolution Agreement" which, if attached, is incorporated into and made a part of this agreement. If no specific ADR procedures are set forth in the agreement, then it shall be understood that the parties shall submit disputes to mediation as a condition precedent to litigation.

If a dispute at law arises from matters related to the services provided under this agreement and that dispute requires litigation instead of ADR as provided above, then:

- (1) the claim will be brought and tried in the judicial jurisdiction of the court where our principal place of business is located and the client waives the right to remove the action to any other judicial jurisdiction, and
- (2) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorney's fees, and other claim-related expenses.

TERMINATION

This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, we shall be paid for services performed to the termination notice date plus reasonable termination expenses.

In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by this agreement, we may complete such analyses and records as are necessary to complete our files and may also complete a report on the services performed to the date of notice of termination or suspension. The expenses of termination or suspension shall include all our direct costs in completing such analyses, records and reports.

ASSIGNS

Neither the client nor our firm may delegate, assign, sublet or transfer its duties or interest in this agreement without the written consent of the party.



Representative Client Services

Geotechnical Engineering

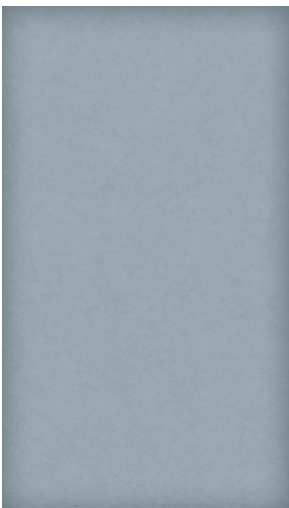
- Soil investigations, including soil borings and test pits
- Design recommendations for foundations, pavements, underground construction and earthwork
- Design of dewatering systems
- Soil dynamic studies, vibrations monitoring and evaluation
- Pile load tests, static and dynamic pile analyses
- Investigation of soil related failures
- Soil and foundation instrumentation
- Laboratory testing of soils

Geoenvironmental Engineering

- Phase I/II Environmental Site Assessment (ESA)
- Baseline Environmental Assessments (BEA)
- National Environmental Policy Act (NEPA) compliance
- Due Care Plan
- Wetland determination/delineation
- Floodplain and wetland permitting
- Hazardous materials evaluations
- Comprehensive asbestos surveys
- Lead based paint evaluations
- Brownfield studies
- Environmental drilling and sampling
- Groundwater monitoring
- Indoor air quality studies
- Water Intrusion/mold evaluations

Construction Engineering

- Field observation and testing
- Earthwork operations
- Foundation construction
- Concrete materials and placement
- Bituminous paving materials and placement
- Masonry
- Laboratory testing of aggregates, concrete, bituminous and masonry
- Construction material evaluation
- AASHTO Accredited Laboratory
- AASHTO R18
- ASTM C1077



Earth Retention Wall Design and Construction



Road Infrastructure Design & Construction

May 23, 2023
G2 Project No. 233354
Page 6

We appreciate the opportunity to be of service to you and look forward to working with you on this project. If you have any questions regarding our proposed scope of services or any other matter pertaining to the project, please do not hesitate to call.

Sincerely,

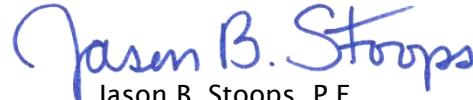
G2 Consulting Group, LLC



Michael G. Dagher, P.E.
Project Engineer

MGD/JBS/jbs

Encl: Fee Schedule
General Conditions



Jason B. Stoops, P.E.
Project Manager / Associate

ACCEPTED FOR WHITE LAKE TOWNSHIP:

BY: _____ DATE: _____



Testing Engineers & Consultants, Inc.

1343 Rochester Road • PO Box 249 • Troy, Michigan 48099-0249
(248) 588-6200 or (313) T-E-S-T-I-N-G • Fax (248) 588-6232
www.testingengineers.com

Engineering Client Success

TEC Proposal: 060-23-133
Date Issued: May 19, 2023

Mr. Sean P. O’Neil, AICP, Community Development Director
White Lake Township
7525 Highland Road
White Lake, MI 48383

Re: Geotechnical Investigation
Proposed New Civic Center Project
10785 Elizabeth Lake Road
White Lake, Michigan 48383

Dear Mr. O’Neil:

In response to your request, Testing Engineers & Consultants, Inc. (TEC) is pleased to submit our proposal for a Geotechnical Investigation of the above-referenced project. We have enclosed a scope of work and fee schedule for the requested services.

TEC looks forward to working with you on this project. We will contact you soon to discuss how we may be of assistance.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Yehia Zak Kabbani, P.E.
Senior Project Engineer

Carey J. Suhan, P.E.
Vice President, Geotechnical
& Environmental Services

YZK/CJS

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All services undertaken are subject to the following policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and the comprehensiveness of the tests, examinations and surveys made. No quotation from reports or use of TEC’s name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, AND TROY
FOUNDED IN 1966



Mr. Sean P. O’Neil, AICP
White Lake Township
May 19, 2023

TEC Proposal: 060-23-133

PROPOSAL FOR A GEOTECHNICAL INVESTIGATION

A. INTRODUCTION

This investigation will provide geotechnical design parameters for the proposed building development.

Based on information provided, we understand that the project will consist of the construction of two buildings with walk-out basements. The public safety building will be two floors including the walk-out basement and the township hall building will be three floors including the walk-out basement. Associated sitework including roadway, parking lots, retaining walls, utilities and stormwater management will be constructed. The site is relatively flat and grass covered with some woods. If the ground is firm and stable, we anticipate access can be made with truck mounted drill rig. If the ground becomes soft and wet, a drill rig mounted on an all-terrain vehicle (ATV) will be required. We have included the fee for an ATV mounted rig as a line item in the Fee Schedule.

Our recommendations will be based upon the preceding project characteristics (some of which have been assumed by us). We should be advised of any differences because they might affect the recommendations to be included in our report.

B. SCOPE OF WORK

Geotechnical Investigation

1. Mobilize and demobilize a truck-mounted drill rig.
2. TEC will establish boring locations and will contact Miss Dig for utility clearance with respect to the boring locations.
3. Perform explorations for the proposed public safety building which will consist of thirteen borings with sampling at least 5 feet into satisfactory support materials. It is estimated that two borings will be to 20-foot depth each, two borings will be to 30-foot depth each, five borings will be to 35-foot depth each and four borings will be to 40-foot depth each.

Perform explorations for the proposed township hall building which will consist of ten borings with sampling at least 5 feet into satisfactory support materials. It is estimated that six borings will be to 50-foot depth each and four borings will be to 60-foot depth each.

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Perform explorations for the proposed sitework which will consist of 14 borings with sampling at least 5 feet into satisfactory support materials. It is estimated that 4 borings will be to 10-foot depth each, eight borings will be to 15- foot depth each and two borings will be to 25-foot depth each.

4. Perform a laboratory investigation to determine the strength, compressibility and physical characteristics of the soils encountered.
5. Analyze the results of the field and laboratory investigation.
6. Document our analysis in a report of the recommended geotechnical design parameters including:
 - A. Bearing capacity and estimated settlements;
 - B. Foundation types or alternates, if possible, where problem support conditions are encountered;
 - C. Floor slab support parameters;
 - D. Stabilization requirements for subgrade materials, if needed;
 - E. Alternate pavement types and thicknesses;
 - F. Evaluation of ground water conditions and its effect on construction and the design of the structures;
 - G. Recommended seismic site class;
 - H. Parameters affecting site grading and drainage;
 - I. Parameters for excavation slope design;
 - J. Geotechnical factors affecting construction of the project;
 - K. Gradation analysis for evaluation of soils as backfill, suitable aggregate base and subbase and preliminary permeability considerations for infiltration;

The geotechnical design parameters will be implemented into design by other professionals.

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Soil Infiltration Tests

Depending upon the soil conditions encountered in the borings, TEC will perform six soil infiltration tests for storm water management. The test pits will be about 5 feet and 10 feet below grade which is estimated to be about 3 to 4 feet below the bottom of the underground detention system.

The testing methodology to be used is the double ring infiltrometer test outlined in the Low Impact Design Manual for Michigan. The testing is expected to take two days. The testing will be performed in accordance with Wayne County rules and regulations. TEC will obtain a representative sample of the tested material for the purpose of conducting sieve and hydrometer analyses and soil classification. TEC will provide the backhoe and operator. TEC will provide a written report and evaluation.

The test pit will be backfilled with the excavated soils and will be lightly compacted by driving over the area with the backhoe. Any further compaction and pavement restoration are not a part of this proposal.

Financial or lending institutions now require an environmental assessment of the site before funding the purchase or construction. Should a Phase II environmental assessment of the site (consisting of borings, chemical laboratory tests, data analysis and report of possible on-site hazardous wastes) be required, it can be performed in conjunction with the geotechnical investigation at considerable savings. Please call if you desire to add this service to our scope of work.

C. FEE SCHEDULE

The following estimate is based upon information available at this time. Our services will end with the submission of the report as outlined in the scope of work. In the unlikely event that unusual or unforeseen subsurface conditions are encountered or if there is a necessary change in the scope of work, you will be notified before additional services are performed. Additional services will not be performed without first obtaining your approval of the additional costs in excess of 10% of the estimated cost. Additional services and meetings will be at the rates in our current fee schedule. Any variations in work from this estimate will be adjusted accordingly using the unit rates below:

Geotechnical Investigation

1.	Mobilization	\$ 2,400.00
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2.	Boring Layout and Utility Clearance 8 hours at \$110.00/hour	\$ 880.00
3.	All-Terrain Vehicle Charge (If Required) At \$425.00/ day	
4.	Drilling and Sampling 0’ – 25’ Depth: 675’ at \$17.00/foot 26’- 50’ Depth: 470’ at \$19.00/foot 51’- 75’ Depth 40’ at \$ 22.00/foot	\$11,475.00 \$ 8,930.00 \$ 880.00
5.	Drilling through Concrete at \$13.00/inch (if required)	
6.	Next Day Ground Water Readings 4 hours at \$200.00/hour	\$ 800.00
7.	Laboratory Analysis	
A.	Moisture, Density, Unconfined 311 samples at \$11.00 each	\$ 3,421.00
B.	Sieve Analysis 6 samples at \$85.00 each	\$ 510.00
C.	Atterberg Limits Determination 6 samples at \$95.00 each	\$ 570.00
D.	Corrosivity Testing 2 samples at \$350.00 each	\$ 700.00
8.	Geotechnical Analysis and Engineering Reports	<u>\$ 5,000.00</u>
Estimated Total		\$35,566.00

Soil Infiltration Tests (Depending Upon Soil Conditions)

1.	Test Pit Layout 2 hours at \$110.00/hour	\$ 220.00
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2.	Backhoe and Operator 2 days at \$1,600.00/day	\$ 3,200.00
3.	Field Engineer 13 hours at \$110.00/hour	\$ 1,430.00
4.	Travel	\$ 80.00
5.	Sieve Analysis 6 samples at \$85.00 each	\$ 510.00
6.	Reports & Project Management	<u>\$ 900.00</u>

Estimated Total \$ 6,340.00

D. TIME FRAME

The following represents our tentative schedule. If the time frame outlined below does not satisfy your scheduling requirements, we will be happy to make other arrangements to meet your specific time schedule. We plan to begin these studies about three to four weeks after receipt of written notice-to-proceed. It is estimated that the borings will require approximately ten days to complete; the laboratory tests plus engineering analysis and report will require an additional four weeks. If requested, a verbal report of our recommendations will be given to you, then followed with a written report.

E. TERMS AND CONDITIONS

1. The client will provide direction to the site, permission to enter the site, and access throughout the site for single-drive axle, truck-mounted equipment.
2. Downtime not caused by TEC will be charged at \$215.00 per hour. For difficult access sites, a surcharge of \$425.00 per day will be charged for an All-Terrain Vehicle drill rig.
3. Rates for Saturday, Sunday, holidays, or shift work will be quoted upon request.
4. Laboratory work that needs immediate attention will be billed at 1.5 times the standard test rate. This applies to work required to be performed on Saturdays or after 5:00 p.m. on weekdays. Work required to be performed on a Sunday or Holiday will be billed at 2.0 times the standard test rate.

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5. The invoice will be based upon the actual work performed and at the quoted rates. Unless otherwise stated, invoices are due 30 days from the invoice date. An administrative fee of 1.5% per month will be added to all delinquent accounts. It is agreed that the client is liable for all costs and expenses of collection, including reasonable attorney's fees, whether or not legal proceedings are instituted. Disputes of invoiced amounts must be submitted in writing within 30 days of invoice date.
6. Unless otherwise stated, local transportation costs will be invoiced at \$0.72 per mile, portal-to-portal from TEC facilities. Lodging, subsistence and transportation for out-of-town services are invoiced at cost plus 20%.
7. The TEC fee for depositions, court appearance, expert witness, legal assistance, litigation, preparation, or other legal work is \$250.00 per hour plus expenses.
8. Unless otherwise stated, two (2) copies of the report will be distributed per client instruction. There may be additional charges for extra copies of reports.
9. TEC will not be responsible for work performed on materials furnished by others not controlled by TEC.
10. Except for circumstances caused by the willful misconduct of TEC, all claims for damages asserted against TEC by a client or third party, including claims against TEC directors, officers, shareholders, employees and agents, are limited to the lesser amount of \$25,000 or the total dollar value of this contract.
11. All reports, plans, specifications, computer files, field data, notes and other documents prepared by TEC as instruments of service shall remain the property of TEC. TEC shall retain all common law, statutory and other reserved rights, including the copyright thereto. The client shall not reuse or make any modifications to reports, plans, specifications, computer files or other documents without the prior written authorization of TEC.
12. In an effort to resolve any conflicts that arise during this project or following the completion of this project, the client and TEC agree that all disputes between them arising out of or relating to this project shall be submitted to nonbinding mediation unless the parties mutually agree otherwise.
13. This proposal is valid if authorized within 90 days of date issued.

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F. AUTHORIZATION

If this proposal meets with your approval, please sign in the spaces provided below and return an executed copy for our files. We will consider this a legal contract and written authorization to proceed.

Accepted By:

Firm

Federal ID No.

Authorized Signature

Typed or Printed Name

Title

Date

From: [Chris Naida](#)
To: [Sean O'Neil](#)
Cc: "[Brian Barrick \(bbarrick@bria2.com\)](#)"; [Chris Naida](#)
Subject: RE: White Lake Township Geotechnical Services, RFP - SME Response
Date: Wednesday, May 24, 2023 10:13:30 PM
Attachments: [image003.png](#)
[WLT Civic Center_Geotech_RFP_2023.pdf](#)

Good Evening Sean,

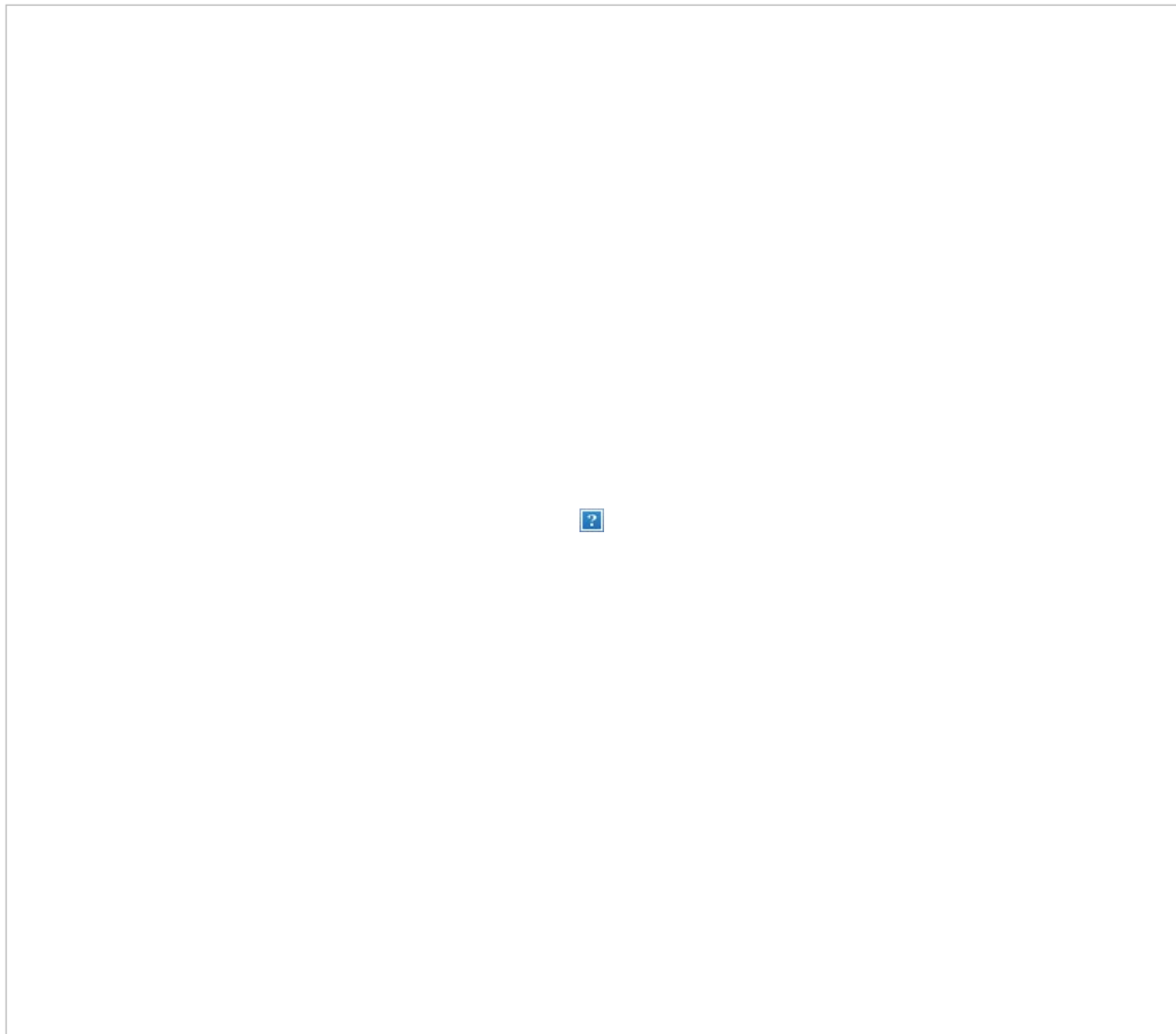
Thanks again for meeting to discuss this project last week. Below is a summary of the geotechnical fee and schedule based on the appended RFP for the project. Brian did a really nice job outlining what is requested, so I'm not going to regurgitate it in this e-mail. Let me know your thoughts and I am glad to answer any questions. If this is acceptable to you, I can prepare a formal proposal with this information for you to authorize us and get this on our schedule.

I've also included a screenshot below of the geotechnical projects we've worked on in the vicinity. Based on the nearby soil conditions, I suspect we could reduce the drilling by about 100 lf (shorten up the 50' and 60' borings). However, I would need more details on the building size/type/loading prior to pulling the trigger...and I can outline our reduce fee at that time.

Fee: Our estimated lump sum fee for the scope of services outlined above is \$78,200.

Schedule: We can mobilize to the site to begin the drilling within 4 to 6 weeks of authorization based on today's schedule. The drilling will take about 10 days to complete, and we can complete the report within 15 to 20 business days after completion of the fieldwork.

Thanks!



Christopher G. Naida, PE | Senior Geotechnical Consultant

REQUEST FOR PROPOSAL

WHITE LAKE TOWNSHIP CIVIC CENTER DEVELOPMENT White Lake Township, Michigan

White Lake Charter Township is soliciting a professional fee proposal to perform Geotechnical Investigation and Engineering Services for the White Lake Township Civic Center Project located at 10785 Elizabeth Lake Road, White Lake, Michigan 48383.

The purpose of the Geotechnical Investigation is to provide information necessary for the design and construction of a Public Safety Building, Township Hall Building, and associated sitework including roadways, parking, retaining walls, utilities, and stormwater management features.

The work shall consist of performing on-site investigative bores and infiltration test pits of approximate quantities and depths noted below. Field investigation shall be conducted in two phases, with the borings as a first phase, then infiltration test pits as a second phase as validated appropriate by first phase borings and preliminary analysis. Provide sample testing/analysis as required to support findings detailed in a report.

Precise boring locations and depths will be provided prior to drilling. The site is largely open farm field with some wooded and wetland areas along the southeaster field edge. The Geotechnical Engineer will be responsible for layout/staking of the bore locations. If the Geotechnical Engineer finds it necessary to change the location or depth of any of these proposed borings, the Owner and Design Consultants shall be notified and a new location and depth shall be agreed upon between the Design Consultants and the Geotechnical Engineer.

Qualified personnel under the supervision of a Registered Professional Engineer shall perform all work. All reports shall bear the seal of a Registered Professional Engineer.

All work within shall be performed in coordination with White Lake Township in accordance with their guidelines, as applicable. The Owner shall be contacted 48 hours prior to any on-site work being performed.

It shall be the Geotechnical Engineer's responsibility to contact Miss Dig and all other pertinent utility companies for information regarding buried utilities and structures prior to commencing boring. The Geotechnical Engineer shall restore the site to existing conditions once all investigative digging is completed. Restoration shall include but not limited to, backfilling and compacting of borings, patching of concrete and bituminous pavements and repair any damaged lawns and plantings.

Questions regarding the Geotechnical Survey Specifications and prepared proposal shall be addressed to Sean O'Neil, White Lake Township. soneil@whitelaketwp.com

Field Bore Sampling

Approximate quantities and depths of bores are noted below. Precise boring locations and depths will be provided prior to drilling. Please provide unit pricing for adjustment of contract value should the quantity or depth of bores change prior to drilling.

- Public Safety Building
 - 2 boring locations @ approx. 20' depth below existing surface grade
 - 2 boring locations @ approx. 30' depth below existing surface grade
 - 5 boring locations @ approx. 35' depth below existing surface grade
 - 4 boring locations @ approx. 40' depth below existing surface grade
- Township Hall
 - 6 boring locations @ approx. 50' depth below existing surface grade
 - 4 boring locations @ approx. 60' depth below existing surface grade
- Sitework
 - 4 boring locations @ approx. 10' depth below existing surface grade
 - 8 boring locations @ approx. 15' depth below existing surface grade
 - 2 boring locations @ approx. 25' depth below existing surface grade
 - 4 infiltration test pits @ approx. 5' depth below existing grade
 - 2 infiltration test pits @ approx. 10' depth below existing grade

Testing

Perform the following field or laboratory tests as appropriate on representative soil samples taken at adequate intervals to accurately characterize subsurface conditions encountered. Use this information to establish the geotechnical design parameters and other information required for the design and construction of the Project. Perform tests in accordance with the applicable ASTM Specification and other recognized standards.

- Stratigraphy
 - Soil classification: ASTM D2487, D2488.
- For cohesive soils
 - Moisture content: ASTM D2216.
 - Atterberg limits: ASTM D4318.
 - Unconfined compressive strength: ASTM D2166.
 - Consolidation: ASTM D2435.
 - Presence of organic or other deleterious materials.
 - Swelling: ASTM D4546.
- For granular soils
 - Insitu density: ASTM D2167, D2922.
 - Grain-size distribution: ASTM D422.
 - Shear-strength.
 - Presence of organic or other deleterious materials.
- Corrosion Consideration
 - PH of soil: ASTM G51
 - Soil resistivity: Laboratory testing with Miller Soil box or field testing as per ASTM G57.
 - Chemical analysis: appropriate test to determine chloride and sulphide content.
 - Perform above tests on representative soil samples to 3 meters (10 feet) below existing grade to determine potential for corrosion of buried metal structures.
- Infiltration Test on subgrade soils for storm water management

- Test pits and infiltration measurements/calculations per Oakland County standards and procedures.
- Site borings shall extend at least 10 feet beyond the proposed infiltration bottom elevation to verify soil strata below the infiltration area and depth to water table.
- Special considerations
 - Moisture-density relationship: ASTM D1557.
 - California Bearing Ratio: ASTM D1883.
 - Resilient modulus of subgrade soil.
 - Water soluble sulfate (S04) in soil (percent by mass) on representative soil samples at foundation level.
- Perform any additional tests which are required for a professional interpretation of subsurface condition at the Project site and to provide design recommendations.
- Upon request, submit the copies of the field soil boring logs and findings to the Owner and the Design Consultants for preliminary evaluation of the findings.

Geotechnical Report & Recommendations

Provide geotechnical engineering recommendations in report format, including but not limited to the following:

- Report and Logs
 - Submit an electronic copy of a draft geotechnical report in pdf format to the Owner and the Design Consultants for review. One week after submittal, review the report with the Architect and coordinate comments. Use the review comments as the basis for developing Final Geotechnical Report.
 - Submit an electronic copy of Geotechnical Report(s) including boring logs and summary of laboratory data to the Owner and the Design Consultants in pdf format. The Owner and the Design Consultants may make and distribute copies of the report(s) and boring logs as necessary in connection with the proposed Project.
 - Show locations of borings as completed, and any changes in boring numbers.
 - Provide boring logs plotted and graphically presented showing boring number, sampling method used, date of start and finish, surface elevations, description of soil and thickness of each stratum, depth to loss or gain of drilling fluid, number of blows per foot (N value) and, where applicable, depth to wet cave-in, depth to artesian head, depth to or elevation of groundwater during and after completion of boring (repeat observation after 24 hours) and presence of gases if observed. Note the location of strata containing organic materials, wet materials or other inconsistencies that might affect the design or construction of the proposed structure.
 - Include results of all laboratory tests performed including test methods or standards used.
- Evaluation and Recommendations
 - Analyze the information developed by the investigation or otherwise available to Geotechnical Engineer, all aspects of subsurface conditions which may affect the design and construction of the proposed structures. Based on such analysis, include in Geotechnical Report, a professional evaluation and recommendations, including but not limited to the following:
 - Recommended shallow foundations or deep foundation system for the structure.
 - Shallow foundations

- Provide net allowable bearing pressure stating whether it is based on bearing capacity or settlement constraints and factor of safety.
- Recommended bearing elevations, maximum slope of line between bottom of footings set at different elevation due to pits or slab depressions.
- Anticipated total and differential settlements.
- Provide recommendations for allowable lateral bearing pressure considering 6 mm (1/4-inch) lateral displacement. Include coefficient of sliding friction.
- Any other design considerations.
- Deep Foundations: Considering site and project constraints, for each type of recommended deep foundation system, provide:
 - Type, size, capacity and estimated tip or bearing elevation/strata.
 - Design recommendations for allowable gravity and tension loads, and related factor of safety with regard to ultimate load capacity. Indicate the basis of load transfer to soil (end bearing, side friction, combination indicating contribution of each, etc).
 - Design recommendations for allowable lateral loads considering 6 mm (1/4-inch) lateral displacement at top for given diameter/size and also provide allowable lateral bearing pressure for drilled piers, if recommended.
 - Recommendations for minimum spacing requirements between deep foundation elements and if applicable group reduction factors for both gravity and lateral load capacities.
 - Anticipated total and differential settlement (considering both immediate and time dependent).
 - Driving criteria for the installation of deep foundation elements.
 - Recommendations for the number and type of load tests, if required. Include criteria for determining allowable loads from the test loads.
 - Recommendations for monitoring and testing of foundation element installation in field.
 - Suitability of deep foundation materials for the intended environment.
 - Any other pertinent information regarding design, procurement, installation, performance, inspection and any other considerations.
- Anticipation of, and management of subsurface (ground and perched) water for design and construction of structures and pavement. Provide estimated average and maximum flow rate for foundation drains. Discuss the need for underfloor drains and provide appropriate recommendations for spacing, size and flow rate. Recommendations for ground water control at all buildings to ensure the integrity of the water-proofing requirements.
- Water table design elevations for permanent facility.

- Lateral and passive earth pressures and coefficient of sliding friction for the design of walls below grade, (rigid and flexible), retaining walls, including type of backfill, compaction and subdrainage recommendations.
- Soil material and compaction requirements for site fill, backfill for the support of structures and pavements. Identify if site soil is suitable for structural fill. Recommendations for base courses and their preparation beneath concrete slab-on-grade. Provide general earthwork requirements for site including cut, fill and soil preparation.
- Frost penetration depth.
- Subgrade Moduli for each type of soil material encountered. Provide vertical subgrade modulus for pavements, slab-on-grade and bottom of footing and horizontal subgrade modulus for footing and deep foundation element.
- Pavement design including subgrade preparation recommendations and section thicknesses for rigid and flexible pavement and back-up documentation for all paved areas including parking, service areas, equipment/service yards and miscellaneous paved areas.
- Stability of slopes.
- Design criteria for temporary excavation and temporary protection such as excavation sheeting, temporary dewatering systems, etc.
- Effect of weather and/or construction equipment on soil during construction. Recommendation for protection, drainage and treatment of soil during construction.
- Precautions and construction details when expansive or reactive soils are encountered.
- Water soluble sulfate content of soil.
- Rock excavation criteria if rocks are encountered.
- Seismic site class, in accordance with MBC 2012, Table 1615.1.1. Where site specific data is not available to a depth of 100 ft, estimate appropriate soil properties based on known geologic conditions.
- Quality control criteria for monitoring site and foundation work.
- Any other pertinent information for the design and construction of the Project.
- Soil infiltration results with a table showing the boring #, test depth, soil at the base of infiltration test, duration of test, estimated field measured infiltration rate (inches/hour), estimated permeability rate and recommended design infiltration rate. Recommendation of design infiltration rate per hour is to be based on Oakland County requirements for procedures and calculations. If, in the professional opinion of the geotechnical engineer, the soils are not suitable for infiltration it shall be so stated.

- Upon request, submit calculations and analysis to support recommendations.
- Drawing and Specification Review
 - At appropriate time during document development, review the Design Consultants' Drawings and Specifications pertinent to the geotechnical work to verify that the Project is as anticipated when the recommendations were provided and are properly incorporated in the Documents.

Proposal Response Date

Proposals will be received until **4:30 p.m. Wednesday, May 24, 2023.** Please provide two (2) hard copies along with emailing an electronic version (PDF) to Sean O'Neil, Community Development Director, at soneil@whitelaketwp.com. The hard copies can be mailed to: White Lake Township – ATTN: Sean O'Neil, 7525 Highland Road, White Lake, MI 48383.