



# CITY of NOVI CITY COUNCIL

**Agenda Item K**  
**June 27, 2016**

**SUBJECT:** Approval to award geotechnical services to Soil and Materials Engineers, Inc. for Beck Road Rehabilitation (8 Mile Road to 9 Mile Road) geotechnical engineering in the amount of \$17,500.

**SUBMITTING DEPARTMENT:** Department of Public Services, Engineering Division *BTC RJA*

**CITY MANAGER APPROVAL:** *[Signature]*

<b>EXPENDITURE REQUIRED</b>	<b>\$ 17,500</b>
<b>AMOUNT BUDGETED</b>	<b>\$ 114,300</b>
<b>LINE ITEM NUMBER</b>	<b>202-202.00-805.160</b>

**BACKGROUND INFORMATION:**

In accordance with the Agreement for Geotechnical Engineering Consultant Services for Public Projects, Soil and Materials Engineers, Inc. (SME) has been selected to provide the initial investigation report for the Beck Road Rehabilitation (8 Mile Road to 9 Mile Road). The geotechnical services necessary for this report exceed \$15,000, which requires City Council approval under the City's Purchasing Policy.

The scope of geotechnical services required for this project has been determined based on discussions with SME and URS (the City's consulting engineer on for the project), and is summarized in the attached proposal from SME. The initial investigation report provides geotechnical information from soil sampling and pavement cores that serve as the basis for pavement design and material selection.

This project is currently in design with construction expected in spring of 2017 when Federal grant funds for this project become available.

**RECOMMENDED ACTION:** Approval to award geotechnical services to Soil and Materials Engineers, Inc. for Beck Road Rehabilitation (8 Mile Road to 9 Mile Road) Initial Investigation in the amount of \$17,500.

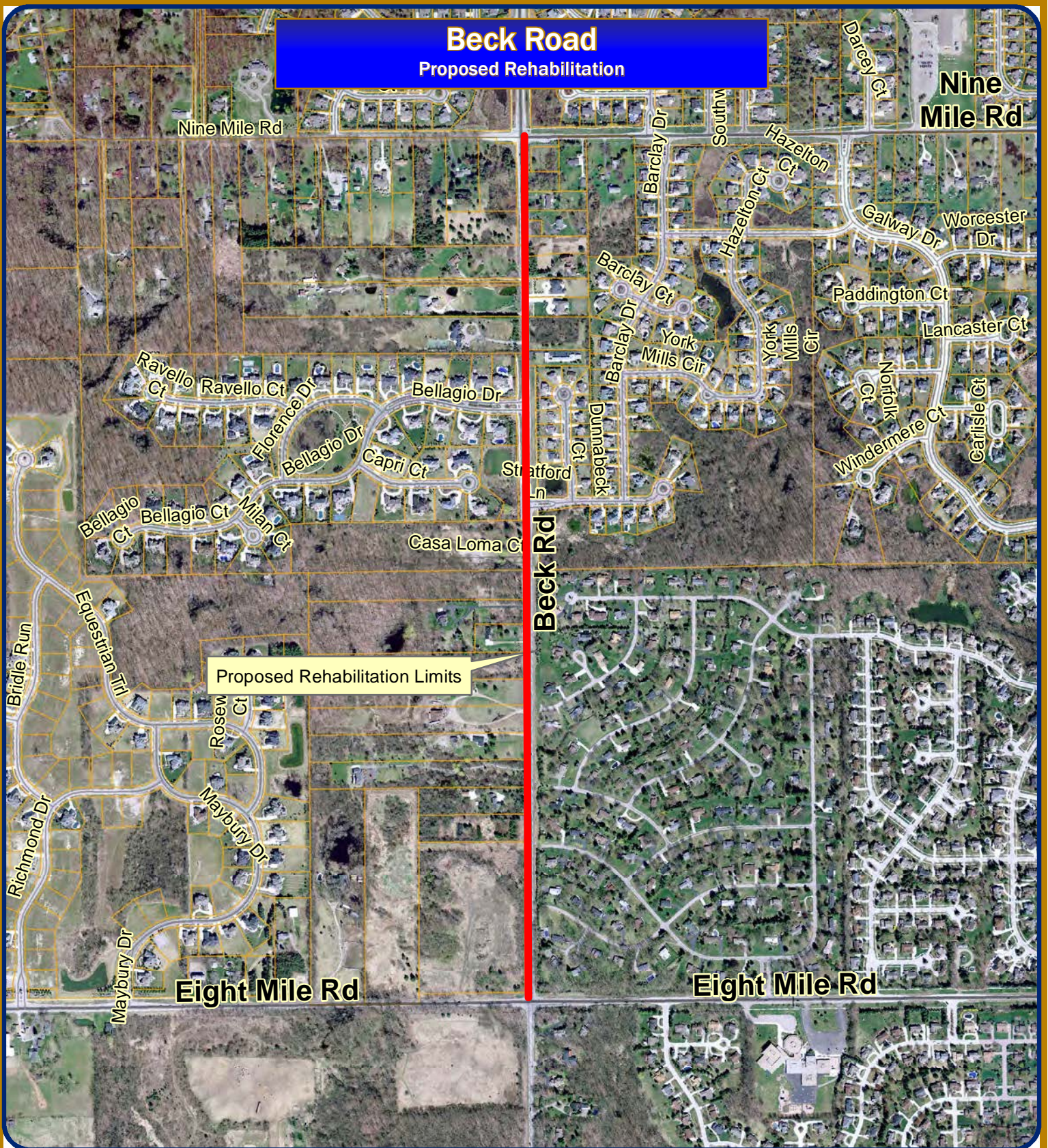
	1	2	Y	N
Mayor Gatt				
Mayor Pro Tem Staudt				
Council Member Burke				
Council Member Casey				

	1	2	Y	N
Council Member Markham				
Council Member Mutch				
Council Member Wrobel				



# Beck Road

## Proposed Rehabilitation

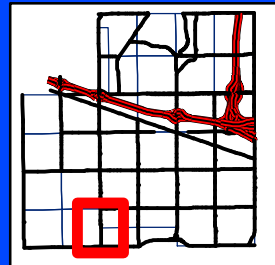


Map Author: A. Wayne  
 Date: November 16, 2015  
 Project:  
 Version #:

Amended By:  
 Date:  
 Department:

**MAP INTERPRETATION NOTICE**

Map information depicted is not intended to replace or substitute for any official or primary source. This map was intended to meet National Map Accuracy Standards and use the most recent, accurate sources available to the people of the City of Novi. Boundary measurements and area calculations are approximate and should not be construed as survey measurements performed by a licensed Michigan Surveyor as defined in Michigan Public Act 132 of 1970 as amended. Please contact the City GIS Manager to confirm source and accuracy information related to this map.



**City of Novi**  
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 Department of Public Services  
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1 inch = 800 feet







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May 26, 2016

Mr. Adam Wayne  
City of Novi  
Department of Public Services  
26300 Lee BeGole Drive  
Novi, Michigan 48375

*Via e-mail: [awayne@cityofnovi.org](mailto:awayne@cityofnovi.org)*

RE: Proposal for Geotechnical Engineering Services  
Beck Road Rehabilitation (8 Mile Road to 9 Mile Road)  
Novi, Michigan  
SME Proposal No. P01040.16

Dear Mr. Wayne:

SME is pleased to provide this proposal for geotechnical engineering services for evaluation of the pavement infrastructure for this project. This proposal was prepared based on our review of the existing Geotechnical Investigation Report by Somat Engineering dated on September 15, 2006, in conjunction with the target boring locations provided in your e-mail on April 11, 2016, our understanding of traffic flow at the site, and an evaluation of USGS and USDA data for the site.

## **PROJECT DESCRIPTION**

We understand the City of Novi is planning to reconstruct the existing pavements on Beck Road from 8 Mile Road to 9 Mile Road. On April 15, 2016, SME visited the site to visually observe traffic and the pavement surface and shoulder conditions within the project limits. The pavement surface is exhibiting severe block and fatigue cracking, rutting, longitudinal and transverse cracking, raveling, and patched potholes. There are several areas of large pavement deformations that will require full depth reconstruction with subgrade repair/improvement.

Based on a review of USGS information for the area, the roadway passes over some low-lying marsh or spillway/swale areas having poor subgrade. Ground surface elevations are showing ranging from about 935 feet in lower areas to just over 950 feet near 9 Mile road. Specific grading information and preliminary plans for the project were not provided. However, we anticipate the proposed pavement will be constructed within 1 foot of the existing pavement surface elevations. We understand some roadway and embankment widening is proposed. The Somat report included 16 pavement evaluation test holes within the project limits. The test hole data is considered suitable but accurate location data for those test holes is not provided in the report.

## **SCOPE OF SERVICES**

In General, SME, will perform a supplemental geotechnical evaluation on-site to look more closely at distressed areas and compare to the SOMAT test holes. We will use both data sets as basis of design for the new pavement.

We have developed the following scope of services for your consideration based on the project data provided.

1. Mark six (6) additional pavement evaluation test holes in the field based on visual evaluation of the site and in key distress areas, and other considerations such as traffic control, overhead wires and marked utilities.
2. Contact MISSDIG to locate utilities in the area of the borings.
3. Provide traffic control during our field activities based on MMUTCD guidelines. We anticipate traffic control will generally consist of a ONE LANE ROAD AHEAD traffic detail with appropriate signs, traffic cones, arrow boards, and traffic control personnel (i.e., regulators) within the middle portion of the roadway.
4. Perform six (6) borings at or near the marked locations. Each boring will extend to a depth of 10 feet below the existing ground surface. The borings will be performed with a truck mounted drill rig.
5. Before soil sampling, cores of the existing pavement will be collected, and US Army Corps of Engineers (USACE) Dynamic Cone Penetrometer (DCP) testing will be performed to a depth of about 6 feet below the existing pavement surface in order to assist in quantifying the base and subgrade support conditions.
6. Split spoon type soil sampling with Standard Penetration Testing (SPT) will be performed at 2.5 foot intervals in the test holes.
7. Groundwater levels will be recorded for the depth first encountered and the depth after bore-hole completion. The borings will be backfilled with the bore-hole soil cuttings and the core hole will be filled with compacted asphalt cold patch. Additional fees would apply if cement-bentonite grout backfill is required. Long-term groundwater levels will not be obtained for this evaluation.
8. Perform laboratory tests including visual soil classification on recovered samples, along with moisture content and strength properties of recovered cohesive samples.
9. Perform four (4) particle size gradation tests on existing aggregate base samples (if present).
10. Perform One-day of muck-depth soundings in the ditch/right-of-way line areas in the low-lying wet portions of the site.
11. Summarize our findings in a written report that will include:
  - a) a boring and muck-depth sounding location diagram;
  - b) a table with the northing and easting of the boring locations;
  - c) Soil Boring logs and DCP data sheets prepared for each boring that will include a description of the soils encountered and the results of the DCP and laboratory tests;
  - d) a description of the site conditions and evaluation procedures;
  - e) a description of soil and groundwater conditions encountered in the borings;

- f) a description of the field and laboratory testing programs and an interpretive analysis of the results;
- g) new pavement design, including recommendations for pavement type, layer thickness, and placement procedures. Final design will require traffic counts and existing Vs. proposed grading plans for our review.
- h) A discussion on feasible rehabilitation options for some areas of the project that are in fair to good condition.
- i) recommendations for site preparation and earthwork, including general pavement subgrade preparation, compaction and materials requirements for engineered fill, and evaluation of the suitability of on-site soils for use as engineered fill;
- j) a discussion of potential construction issues related to pavements based on the soil and groundwater conditions encountered.

## PROFESSIONAL SERVICES FEE

Our recommended budget for the above scope of services is **\$17,500** and we propose a Time and Materials invoicing basis for this project. We have budgeted for two days of traffic control operations at the site. If on-site operations go smooth we may finish in one day, resulting in lower fees. SME may be using a professional traffic control firm (Best Barricading) as part of the team. You will only be invoiced for the actual amount of traffic control and field time used at the site. If further services are required for this project that go beyond the scope of services outlined in this proposal, additional fees will be required and we would contact you to discuss first if any obvious changes arise.

## ASSUMPTIONS AND LIMITATIONS

In addition to the attached Special Conditions for Drilling and Excavating, the following assumptions were made in preparing our scope of services and professional services fee:

1. SME will locate the borings locations and provide northing and easting coordinates for each new test hole.
2. Shoulder and lane closures for soil boring operations will be performed during weekdays between 10:00 am and 2:00 pm at the site.

Our pavement design recommendations would be preliminary until SME reviews the final paving and grading plan and cross sections for the low-lying wet areas.

Although SME offers other services, our proposed scope of services for this evaluation does not include detailed recommendations for erosion control; cost or quantity estimates; preparation or review of plans and/or specifications; construction materials services; or time for travel/meetings.

## **SCHEDULE AND AUTHORIZATION**

Based on our current drilling schedule, we can mobilize to the site within about 3 to 5 weeks after receiving authorization to proceed. The field exploration should take two to three days to complete. Our final report can be issued within about three weeks after drilling is complete. Draft boring logs and preliminary recommendations can be provided.

If you have questions concerning this proposal, please contact us.

Very truly yours,

**SME**

Abdul AL-Rawashdeh, PhD, PE  
Senior Staff Engineer

Christopher R. Byrum, PhD, PE  
Senior Consultant

Attachments: Special Conditions for Drilling and Excavating  
Important Information About This Geotechnical Engineering Proposal

## SPECIAL CONDITIONS FOR DRILLING AND EXCAVATION

- 1. RIGHT TO SUBCONTRACT:** SME reserves the right to subcontract for drilling, excavation of test pits, clearing and grubbing for site access, traffic control, and other instrumentation or services necessary to perform the services required by the Agreement.
- 2. RIGHTS OF ENTRY:** CLIENT shall provide any necessary rights of entry for SME, including its agents, staff, contractors or subcontractors, to access the site to perform all acts, studies, and research, including tests and evaluation, pursuant to the agreed services. CLIENT shall inform SME of any special requirements as a condition upon such rights of entry.
- 3. PERMITS AND LICENSES:** CLIENT shall secure all required permits, except specific permits identified in Agreement as being secured by SME. SME shall hold and maintain all necessary business and professional licenses, registrations, and accreditations necessary to perform its services.
- 4. UNDERGROUND UTILITIES AND STRUCTURES:** SME will take reasonable precautions to avoid damage to subterranean structures or utilities, including contacting the appropriate One-Call system for utility clearance. Unless otherwise identified in the Agreement, CLIENT is responsible for identifying all subterranean structures or utilities in the area of evaluation and sharing that information with SME prior to commencement of the field exploration. CLIENT agrees to furnish SME with all information identifying the type and location of utility lines and other man-made structures located beneath the surface of the site in the proposed work area. CLIENT will also locate all known private underground utilities at the site prior to SME performing the field exploration. CLIENT agrees to defend, indemnify and hold SME harmless from all claims, liability, and expense associated with alleged damage to subterranean utilities or structures, except if such damage was caused by SME's sole negligence.
- 5. SITE PLANS AND SURVEYS:** CLIENT will provide available project site plans and surveys, preferably in digital format (AutoCAD compatible format), and provide topographical information, if available. The accuracy and proximity of survey control provided by CLIENT will affect the accuracy of test locations and elevation determinations. Unless otherwise noted, the accuracy of test locations and elevations will be commensurate only with pacing and approximate measurements or estimates.
- 6. TEST LOCATIONS:** If unanticipated site conditions or site conditions not made known to SME prevent access to locations specified in the Agreement, then SME may deviate a reasonable distance from proposed test locations. If CLIENT objects, then SME shall have the right to reasonable adjustment of its fees and time for performance.
- 7. FIELD SERVICES SCHEDULE:** Field services will be performed Monday through Friday, except on holidays, and during normal business hours unless noted otherwise in the Agreement. Additional fees may be required for field services provided on weekends and holidays, or at times other than normal business hours.
- 8. RESTORATION:** CLIENT recognizes that some damage to the site may occur in the normal course of our services. SME will exercise reasonable care to mitigate damage from drilling or excavation equipment to lawn, landscape, pavement, or soft ground. Unless otherwise stated in the Agreement, our fee does not include time or expenses associated with the repair of wheel ruts, track marks, or other damage such as crop damage. Due to the potential applicability of environmental and transportation regulations, excess soil cuttings generated from drilling activities will not be removed from the site by SME. Unless otherwise noted in the Agreement, the boreholes will be backfilled with auger cuttings and/or bentonite, and excavations will be backfilled with excavated material. Asphalt coldpatch or quick-setting concrete will normally be used to repair existing pavement areas flush to the existing grade. Core holes in concrete floors and bridge decks will be filled with quick-setting concrete flush to the existing floor surface. Excess soil will be left on-site at the locations of the boreholes or excavations, placed in nearby greenway areas, or containerized as appropriate for site and environmental conditions.
- 9. VARIATIONS IN SUBSURFACE CONDITIONS AND INTERPRETATION OF SME DATA:** CLIENT recognizes that subsurface conditions on the site may vary from those encountered at the locations where borings, surveys, or explorations are made by SME and that the data, interpretations and recommendations of SME are based solely on the information available to SME. SME will not be responsible for the data generated by others or interpretations and recommendations by others based upon the data and information developed or provided by SME.
- 10. SURFACE MATERIALS:** Unless otherwise noted in the Agreement, SME will obtain approximate thickness measurements of surficial materials, such as pavements, aggregate base, and topsoil, at the time of the exploration. These measurements are considered approximate since some mixing of surficial materials and the underlying subgrade can occur. Additional evaluation methods and additional fees would be required to obtain more precise measurement of surface materials.
- 11. TRAFFIC CONTROL:** Unless otherwise noted in the Agreement, SME will be responsible for supplying such signs, barricades and traffic control personnel as may be needed for safe drilling or excavation operations.

## 12. SAMPLE DISPOSAL:

- a. Unless otherwise requested in writing by CLIENT, SME will dispose of soil samples submitted to SME's laboratories 60 days after the samples are obtained. Unless otherwise requested in writing by CLIENT, samples submitted to subcontract laboratories will be disposed by those laboratories in accordance with their sample retention policies. CLIENT agrees that it will not hold SME responsible or liable for any loss of test specimens or samples, and CLIENT agrees to pay costs associated with the storage of samples beyond the normal storage times described herein.
- b. In the event residual sampled materials in SME's possession are determined to be RCRA hazardous wastes, contain PCBs above Type II landfill disposal limits, or are otherwise subject to state or federal disposal restrictions, we will, after completion of testing and at CLIENT's expense, and using a manifest signed by CLIENT as generator, have such samples transported to a location selected by CLIENT for final disposal (see **Disposal of Hazardous and Other Regulated Wastes**). CLIENT agrees to pay all costs associated with the storage, transport, and disposal of such samples. CLIENT recognizes and agrees that we are acting as a bailee and at no time assume title to said waste.

## 13. ENVIRONMENTAL RISKS:

- a. CLIENT shall inform SME of any known environmental site conditions that could affect the health and safety of our field personnel or that could affect SME's performance of its services. For projects other than environmental assessments, SME will report only for informational purposes, unusual odors and/or colorations of the soil observed during field activities.
- b. Unanticipated hazardous substances, subsurface contaminants, and/or biological pollutants (HAZMAT) or levels of HAZMAT may exist at the project site. The discovery of unanticipated HAZMAT may constitute a changed condition mandating renegotiation of the scope and fees and make it necessary for SME to take immediate measures to protect human health and safety, and/or the environment. SME agrees to notify CLIENT as soon as practicable if unanticipated HAZMAT is encountered. CLIENT authorizes SME to take measures that, in SME's sole professional opinion, are justified to preserve and protect the health and safety of SME's personnel and the public, and/or environment, and CLIENT agrees to compensate SME for the additional cost of such work. SME does not assume control of or responsibility for reporting to any federal, state, or local public agencies, any conditions at the site that may present a potential danger to health, safety, or the environment.
- c. There is a risk that drilling and sampling may result in contamination of certain subsurface areas, such as when a boring device moves through a contaminated area and connects it to an aquifer not previously contaminated. SME will exercise reasonable care and caution to prevent such occurrences; however, because such drilling and sampling is a necessary aspect of the services that SME will provide for CLIENT's benefit, CLIENT agrees that SME shall not be held liable for exacerbation of HAZMAT caused in this manner.
- d. CLIENT recognizes that discovery of HAZMAT on the site may result in a significant reduction of the property's value, and SME cannot be held responsible for such devaluation.
- e. It is possible this assessment may fail to reveal the presence of contaminants, hazardous materials, or other types of environmental contamination collectively referred to as "contaminants" at sites where contaminants are assumed, expected, or subsequently determined to exist. CLIENT understands that SME's failure to discover contaminants does not guarantee that contaminants do not exist at the site. Similarly, a site which in fact is unaffected by contaminants at the time of SME's study, may later, due to natural phenomena or human intervention, become contaminated. CLIENT agrees that it would be unfair to hold SME liable for failing to discover contaminants whose exact location is impossible to foretell, or for failing to discover contaminants, which, in fact, did not exist at specific sampling locations at the time such samples were taken. Accordingly, CLIENT waives any claim against SME, and agrees to defend, indemnify and save SME harmless from any claims or liability for injury or loss arising from SME's failure to detect the presence of contaminants through techniques commonly employed for the purpose.
- f. CLIENT agrees to defend, hold harmless and indemnify SME from and against any and all claims and liabilities resulting from encountering unexpected HAZMAT, including compensation for any time spent and expenses incurred by SME.

- 14. DISPOSAL OF HAZARDOUS AND OTHER REGULATED WASTES:** CLIENT agrees to select treatment/disposal facilities, pay for transportation and disposal, and sign, or have OWNER sign all waste profile forms, land disposal certifications, transportation manifests, and any other documentation required for transportation and disposal of hazardous wastes, PCB wastes, or other regulated wastes. Under no circumstance will SME select a disposal /treatment facility, arrange for transportation or disposal of regulated wastes, or otherwise act as agent for the generator of the wastes. CLIENT agrees to the maximum extent permitted by law to defend, hold harmless and indemnify SME from and against any and all claims and liabilities resulting from violation of any federal, state or local statute, regulation or ordinance relating to the disposal of hazardous wastes, substances or constituents or allegations that SME generated, transported, stored, treated or disposed of wastes or other contaminated materials, or arranged for the transportation, treatment, storage, or disposal of wastes or other contaminated materials, subject to federal, state, or local regulation or law.



# Important Information About This Geotechnical Engineering Proposal

*Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.*

*While you cannot eliminate all such risks, you can manage them. The following information is provided to help.*

## **Participate in Development of the Subsurface Exploration Plan**

Geotechnical engineering begins with the creation of an effective subsurface exploration plan. This proposal starts the process by presenting an initial plan. While that plan may consider the unique physical attributes of the site and the improvements you have in mind, it probably does not consider your unique goals, objectives, and risk management preferences. Subsurface exploration plans that are finalized without considering such factors presuppose that clients' needs are unimportant, or that all clients have the same needs. *Avoid the problems that can stem from such assumptions* by finalizing the plan and other scope elements directly with the geotechnical engineer you feel is best qualified for the project, along with the other project professionals whose plans are affected by the geotechnical engineer's findings and recommendations. If you have been told that this step is unnecessary; that client preferences do not influence the scope of geotechnical engineering service or that someone else can articulate your needs as well as you, you have been told wrong. No one else can discuss your geotechnical options better than an experienced geotechnical engineer, and no one else can provide the input you can. Thus, while you certainly are at liberty to accept a proposed scope "as is," recognize that it could be a unilateral scope developed without direct client/engineer discussion; that authorizing a unilateral scope will force the geotechnical engineer to accept all assumptions it contains; that assumptions create risk. *Manage your risk. Get involved.*

## **Expect the Unexpected**

The nature of geotechnical engineering is such that planning needs to *anticipate the unexpected*. During the design phase of a project, more or deeper borings may be required, additional tests may become necessary, or someone associated with your organization may request a service that was not included in the final scope. During the construction phase, additional services may be needed to respond quickly to unanticipated conditions. In the past, geotechnical engineers commonly did

whatever was required to oblige their clients' representatives and safeguard their clients' interests, taking it on faith that their clients wanted them to do so. But some, evidently, did not, and refused to pay for legitimate extras on the ground that the engineer proceeded without proper authorization, or failed to submit notice in a timely manner, or failed to provide proper documentation. *What are your preferences? Who is permitted to authorize additional geotechnical services on your project? What type of documentation do you require? To whom should it be sent? When? How?* By addressing these and similar issues sooner rather than later, you and your geotechnical engineer will be prepared for the unexpected, to help prevent molehills from growing into mountains.

## **Have Realistic Expectations; Apply Appropriate Preventives**

The recommendations included in a geotechnical engineering report are *not final*, because they are based on opinions that can be verified only during construction. For that reason, most geotechnical engineering proposals offer the construction observation services that permit the geotechnical engineer of record to confirm that subsurface conditions are what they were expected to be, or to modify recommendations when actual conditions were not anticipated. *An offer to provide construction observation is an offer to better manage your risk.* Clients who do not take advantage of such an offer; clients who retain a second firm to observe construction, can create a high-risk "Catch-22" situation for themselves. *The geotechnical engineer of record cannot assume responsibility or liability for a report's recommendations when another firm performs the services needed to evaluate the recommendations' adequacy.* The second firm is also likely to disavow liability for the recommendations, because of the substantial and possibly uninsurable risk of assuming responsibility for services it did not perform. Recognize, too, that no firm other than the geotechnical engineer of record can possibly have as intimate an understanding of your project's geotechnical issues. As such, reliance on a second firm to perform construction observation can elevate risk still more, because its personnel may not



have the wherewithal to recognize subtle, but sometimes critically important unanticipated conditions, or to respond to them in a manner consistent with your goals, objectives, and risk management preferences.

### **Realize That Geoenvironmental Issues Have Not Been Covered**

The equipment, techniques, and personnel used to perform a geoenvironmental study differ significantly from those used to perform a geotechnical study. *Geoenvironmental services are not being offered in this proposal. The report that results will not relate any geoenvironmental findings, conclusions, or recommendations.* Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may be addressed as part of the geotechnical engineering study described in this proposal, the geotechnical engineer who would lead this project **is not** a mold prevention consultant; **none of the services being offered have been designed or proposed for the purpose of mold prevention.**

### **Have the Geotechnical Engineer Work with Other Design Professionals and Constructors**

Other design team members' misinterpretation of a geotechnical engineering report has resulted in costly problems. Manage that risk by hav-

ing your geotechnical engineer confer with appropriate members of the design team before finalizing the scope of geotechnical service (as suggested above), and, again, after submitting the report. *Also retain your geotechnical engineer to review pertinent elements of the design team members' plans and specifications.*

Reduce the risk of unanticipated conditions claims that can occur when constructors misinterpret or misunderstand the purposes of a geotechnical engineering report. Use appropriate language in your contract documents. Retain your geotechnical engineer to participate in prebid and preconstruction conferences, and to perform construction observation.

### **Read Responsibility Provisions Closely**

Clients, design professionals, and constructors who do not recognize that geotechnical engineering is far less exact than other engineering disciplines can develop unrealistic expectations. Unrealistic expectations can lead to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their proposals. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks, thus to encourage more effective scopes of service. *Read this proposal's provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance**

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit to everyone involved with a construction project. Confer with an ASFE member geotechnical engineer for more information. Confirm a firm's membership in ASFE by contacting ASFE directly or at its website.



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