

WORK SCOPE FOR GEOTECHNICAL INVESTIGATIONS

**PROJECT NAME: Penn Brook Elementary School; 68 Elm St., Georgetown, MA
Feasibility Study**

DRA PROJECT NUMBER: 11013.00

I. Site and Project Description

Existing Elementary School

See attached site plans which show APPROXIMATE existing conditions,
and locations of proposed borings.

Scope of work is a Feasibility Study for renovations of the existing building, possible expansion, and possible new construction followed by demolition of the existing building.

II. General Requirements

- A. The geotechnical investigation shall be performed by a qualified engineering firm engaged in such work on an ongoing basis and shall be in conformance with 780 CMR 1802.2 through 1802.6. All subsurface exploration, analyses, and reports shall be prepared/performed under the direct supervision of a professional engineer registered in the State of Massachusetts who shall sign all reports.
- B. The drilling contractor is to be retained by the geotechnical engineer and the drilling cost shall be included with the proposal.
- C. Proposals must be submitted to Drummey Rosane Anderson, Inc. by the close of business on Sept. 17, 2011. Proposals received by facsimile or email will be accepted. The contract will be awarded on or about Sept. 22, 2011.
- D. The final geotechnical investigation report must be received by Oct. 1, 2011.
- E. All firms submitting proposals must meet the following criteria:
 - 1. The firm shall have been in business providing geotechnical engineering for a minimum of three years.
 - 2. The firm must perform all geotechnical work with its own forces. Testing borings may be subcontracted.
 - 3. All test boring inspections shall be performed by qualified technicians under the direct supervision of a professional engineer registered in the State of Massachusetts.

4. The firm shall demonstrate proof of insurance by providing certificates of insurance for general and professional liability insurance.
- F. Price proposals shall stipulate the following:
1. Daily rate for test borings and inspection with a not-to-exceed budget allotment for the number of days estimated to complete the subsurface exploration program.
 2. No reimbursable expenses shall be allowed. The cost for mileage and expenses shall be included with the daily rate stipulated for test boring inspections.
 3. Prices for soil laboratory testing, geotechnical analyses, and report preparation shall be lump sum.

III. Subsurface Explorations

- A. Soil borings: Perform soil borings at the locations indicated on the attached drawing by hollow stem auger or wash casing drilling techniques. Soil samples shall be retrieved at five foot intervals or strata changes in accordance with ASTM D1586. Soils shall be classified in the field by an experienced geotechnical technician using the Burmister soil classification system. Subsurface conditions at each boring shall be recorded on boring logs prepared for each boring which shall indicated sampling intervals, blow counts, groundwater depths, strata changes, and any other pertinent observations. Number of borings shall be not less then the number indicated on the attached plan(s).

Advance borings to minimum depths of 20 feet below existing ground surfaces into competent bearing strata or refusal. If unsuitable soil conditions are encountered at depth, extend borings at least five feet into competent bearing strata, as evidenced by two consecutive spilt spoon samples.

Rock coring is not anticipated to be required for this project. If, in the judgment of the geotechnical engineer, rock coring appears warranted due to shallow refusal conditions, then the geotechnical engineer shall advise the Client of the need for rock coring and a unit price for rock coring shall be negotiated at that time. Rock coring shall not be performed until receiving authorization to proceed.

- B. The geotechnical engineer shall be responsible for contacting DIGSAFE and obtaining clearance to perform the explorations at the site.

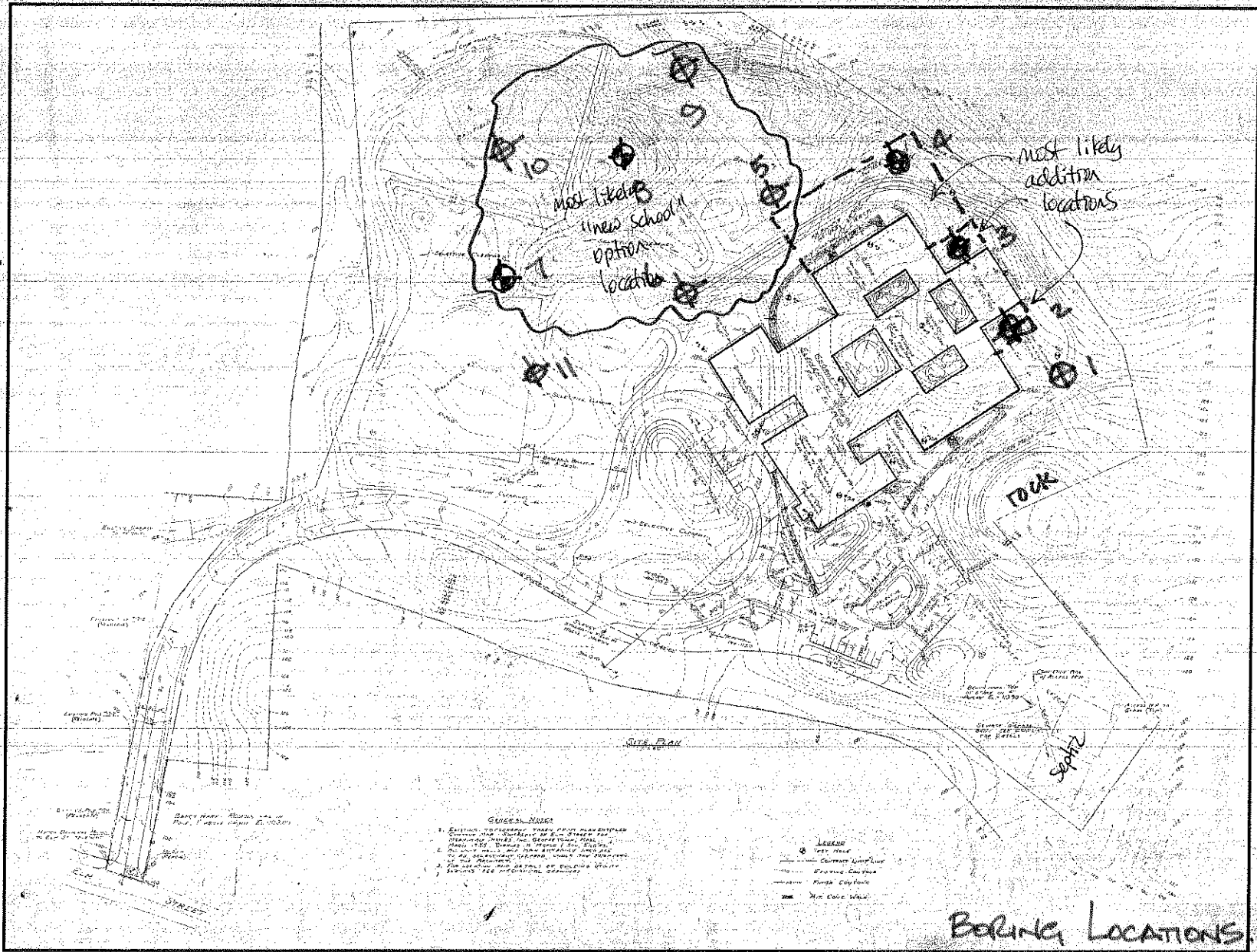
IV. Environmental Screening and Soil Laboratory Tests

- A. The headspace of all split spoon soil sample jars shall be screened for total volatile organic compounds (VOC's) using a photoionization detector. If high concentrations of total VOC's are detected, the geotechnical engineer shall make recommendations for additional investigations.
- B. Perform two particle gradation analyses on soil samples within potential borrow sources per ASTM D422.
- C. Perform two modified proctor compaction tests on soil samples obtained from auger tailings within potential borrow sources per ASTM D1557.
- D. If additional soil laboratory analyses appear warranted, based on subsurface conditions encountered such as soft cohesive soils, then the geotechnical engineer shall make recommendations for additional soil laboratory analyses. The unit prices for such soil laboratory testing services should be included as an attachment to the unit price proposal.

V. Engineering Evaluation and Report

- A. The geotechnical engineer shall prepare a report in accordance with 780 CMR 1802.6 which summarizes the results of subsurface explorations and the engineer's interpretation, analyses, and recommendations for foundation design and earthwork construction. At a minimum, the report shall contain the following:
 - 1. Summary of subsurface exploration program and subsurface conditions encountered, including all strata encountered, groundwater observations, refusal depths, and/or bedrock encounter.
 - 2. Recommendations for spread footing foundations with net allowable bearing pressure for granular soils based on settlement considerations and net allowable bearing capacity of cohesive soils based on shear strength. Provide estimates of total and differential settlements under proposed loading conditions.
 - 3. If spread footings are not appropriate, provide recommendations for appropriate alternatives.

4. Evaluate the susceptibility of the site to liquefaction. Assess the site's seismic site factors in accordance with the Massachusetts State Building Code.
5. Provide recommendations for foundation drainage and floor slab underdrain systems and dampproofing, if warranted.
6. Provide recommendations for foundation underpinning and/or lateral earth support systems during construction. Provide recommendation concerning the design and monitoring of such systems.
7. If rock excavation is anticipated, provide recommendations with respect to the type of fragmentation to be used, pre-blast surveys, seismic monitoring, and protection of adjacent structures/utilities.



SITE PLAN

GENERAL NOTES

1. EXISTING TOPOGRAPHY: THESE DATA HAVE BEEN OBTAINED FROM THE SURVEY OF E.M. STREET AND ADJACENT AREAS. THE GEOMETRIC DATA IS BASED ON THE SURVEY OF E.M. STREET AND ADJACENT AREAS AND IS SUBJECT TO THE ACCURACY OF THE SURVEY.
2. THE LOCATION AND DETAILS OF BUILDING FOOTPRINTS ARE SHOWN IN THE ARCHITECTURAL DRAWINGS.
3. SEE ARCHITECTURAL DRAWINGS FOR DETAILS.

- LEGEND
- TEST HOLE
 - EXISTING CURB LINE
 - EXISTING CURB LINE
 - EXISTING CURB LINE
 - EXISTING CURB LINE

most likely
"new school"
option
location

most likely
addition
locations

TOUR

TOUR

BERLING LOCATIONS

DRA

DRUMMAY ROSANE ANDERSON
newton, oxford, harris, and



GEORGETOWN
ELEMENTARY SCHOOL



SITE PLAN

DATE	1-2
SCALE	1" = 100'
NO.	3