

**CM Kirby Engineering, PLLC  
PO Box 291  
Norwood, MA 02062  
(617) 872-5553**

August 26, 2018

Subject: 21 Eastman Road  
Somerville, MA  
**Soil Investigation**

To Whom It May Concern:

This office was retained to conduct 4 test pits on-site to evaluate the bearing soils of the proposed retaining wall at the subject property. The test pits were performed on Wednesday August 8, 2018 at 1400 hours and at the time of the site visit the weather was 80 degrees Fahrenheit with overcast skies. A Bobcat excavator was utilized to conduct the test pits and one operator and one laborer were present during the excavation(s).

The existing retaining wall was cut to gain access to the lower elevations of the site to conduct the test pits. Mirafi filter fabric was placed below 18 inches of 3" crushed stone to stabilize the access way created to the lower elevation of the site. The lower elevations of the site were undeveloped and had light to moderate size trees. The property was surrounded on all sides with numerous developed parcels. Silt fence and a hay sock was installed at the lowest elevation of the property to prevent silt from exiting the property during a rain event.

The 4 test pits were conducted at the turning points of the proposed retaining wall and are documented on the attached plan. The test pits were all approximately 3' wide, 8' long and 5' (+/-) deep.

The following soil conditions occurred at all the test pits:

0-18" topsoil and roots

18"-24" silty subsoil

24"-bottom of test pit – dense, silty sand with little gravel (Refusal in test pits 2 and 3)

Per the Massachusetts State Building Code, 9<sup>th</sup> edition Table 1806.2a – Presumptive Allowable Vertical Bearing Pressures, the material shall be considered a Material Class 8 soil, Dense with a Net Bearing Pressure Capacity of 4 tons per square foot (TSF).

The test pits were conducted to confirm that the bearing strata is in compliance with the design recommendations recommended by the soils report dated July 12, 2018 for the property, conducted by KMM Geotechnical Consultants, LLC, Hampstead, NH. The test pits were excavated to a depth greater than the 30-inch embedment requirement.

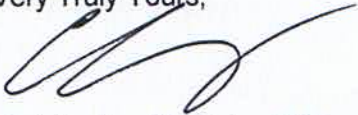
This report serves as an affidavit that the soils encountered at bearing elevation for the proposed retaining wall are adequate to support the design loading.

21 Eastman Road  
Somerville, MA

This report and analysis is based upon observations of the visible and apparent condition of the soils at the date of this investigation. Although care was taken to perform a proper and thorough investigation, we make no representation regarding the existence of latent or concealed defects. No warranty or guarantee is expressed or implied with any structure.

If you have any questions, please call at your earliest convenience.

Very Truly Yours,



Christopher M. Kirby, P.E.

attachment







21 Eastman Road  
Somerville, MA



Existing Retaining Wall Cut To Gain Access



21 Eastman Road  
Somerville, MA



Stabilized Slope Entrance



Silt Fence and Haybales



21 Eastman Road  
Somerville, MA



Test Pit 1



Test Pit 1



21 Eastman Road  
Somerville, MA



Test Pit 2



Test Pit 2



21 Eastman Road  
Somerville, MA



Test Pit 3



21 Eastman Road  
Somerville, MA



Test Pit 3



21 Eastman Road  
Somerville, MA



Test Pit 4



21 Eastman Road  
Somerville, MA



Test Pit 4

**CHRISTOPHER M. KIRBY, P.E.**

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**WORK EXPERIENCE**

**Owner/Structural Engineer  
Norwood, MA**

**CHRISTOPHER KIRBY, PE  
2000-present**

*Various Residential/Commercial/Educational Projects*

- Structural engineer solving all aspects of structural issues/concerns
- Retaining wall design
- Framing plans
- Architectural plans
- Code review/analysis
- IBC and IEBC compliance
- Structural analysis
- Shear wall design
- Existing structure analysis
- Zoning analysis

**Project Manager/Senior Civil/Structural Engineer  
Westwood, MA**

**Mott MacDonald  
2010 – present**

*Various Projects Worldwide*

- Project Manager in responsible charge for all aspects of the project(s),
- Interacts with clients to ensure project tasks and deliverables are delivered on-time,
- Performed schedule updates, extra work order preparation, and cost analysis of a project,
- Performs structural engineering duties for the power division of the Company,
- Coordinates between disciplines to ensure conflicts are resolved in planning stages,
- Provides solutions to clients for non-conformance issues, and
- Reviews contractors' submissions to ensure compliance with the design drawings.

**Project Manager/Structural Engineer  
Lowell, MA**

**S & R Corporation  
2007 – 2010**

*Bridge Replacement Project, Pepperell, MA, \$8.4 million, Erving, MA, Bridge E-10-013 and E-10-016, \$5.4 million, Clinton, MA, Bridge C-16-003, \$4.7 million; Hudson, MA, Bridge H-25-007, \$3.6 million*

- Performed all in-house structural engineering for the Company including the creation and submission of steel erection procedures, demolition procedures, temporary foundations for bridges, traffic light gantry poles, and pedestrian walkways, support of excavation, dewatering plans, and solving structural issues occurring in the field,
- Project Manager in responsible charge for all aspects of the project(s),
- Responsible for the planning, shop drawing review, coordination, and subcontractor supervision for the completion of the project(s),
- Performed schedule updates, extra work order preparation, and cost analysis of a project, and
- Ensures the quality control of subcontractors work for compliance with the Contract documents including document control of submittals, maintaining current Contract documents and communication with subcontractors.



**Project Manager/Structural Engineer  
Canton, MA**

**Barletta Engineering/Heavy  
2001- 2007**

*MWRA Walnut Hill Water Treatment Plant (CP-4), \$120 million*

- Responsible charge for the structural, architectural and a number of mechanical systems on a 120 million dollar heavy civil construction project,
- Designed and coordinated the layout and installation of mechanical components for the project. Checked clearances around equipment, analyzed foundation design and anchorage based on various loading conditions including dead, live, wind, snow, cyclical, vibration, and seismic loadings.
- Reviews plans and submittals for compliance with the projects' plans, specifications, local, and state regulations including coordination between disciplines to prevent conflicts during installation,
- Responsible for the quality control of all subcontractors' work under my direct supervision,
- Communicated with the field on issues and coordinates an acceptable solution with the Construction Manager, Design Engineer, Architect and Owner to continue job progress, and
- Site safety officer for the MWRA CP-8 project and alternate site safety officer with the MWRA CP-4 project.

*Commonwealth Pier Renovations, MPA Contract D251-C3, \$5.4 million*

- Superintendent/Project Manager in responsible charge for all aspects of the project including structural, architectural, mechanical, electrical and plumbing coordination, including completion of the project,

*MBTA Savin Hill/Fields Corner/Shawmut Station Improvements (S45CN01), \$44 million*

*MBTA Ashmont Station Improvements (S45CN02), \$35 million*

- Project Engineer in responsible charge for documenting claims and changes on the renovation of four MBTA stations, and
- Reviewed plans and submittals for compliance with the projects' plans, specifications, local, and state regulations including coordination between disciplines to prevent conflicts during installation.

*Sumner/Callahan Vent Buildings Exhaust Stack and Roof Renovations, MTA Contract 043-519, \$6 million*

- Project Manager in responsible charge for all aspects of the project including structural, architectural, mechanical, electrical and plumbing coordination, including completion of the project.

**Owner/Carpenter  
Norwood, MA**

**C.M. Kirby Construction Company, Inc.  
2000- 2001**

- Owner of a residential home improvement contracting company. Procured work, coordinated and performed various carpentry and laboring activities, in charge of all aspects of the company.

**Project Engineer  
Framingham, MA**

**J. F. White Contracting Company  
1997- 2000**

- Worked on the Central Artery/Tunnel project C15A1 for the J.F. White/Slattery/Perini Joint Venture as a Project Engineer,
- Responsible for the installation of 330,000 square feet of slurry wall comprising 70 million dollars of a 370 million dollar project on time and under budget,
- Coordinated the procurement/fabrication/delivery of 10,000 tons of steel soldier piles utilized in the projects' slurry walls,
- Managed a team of co-workers to ensure that all preliminary work was completed prior to the installation of the projects' slurry walls,
- Participated in the development of a value engineering cost proposal (VECP) that saved the project 1.6 million dollars,
- Developed, performed preliminary calculations and implemented temporary underpinning/overpinning measures for the existing Central Artery bridge to allow for the installation of low headroom slurry wall conditions,
- Performed production analysis of different site operations to compare actual production to projected bid time production rates,
- Worked on a team overseeing the fabrication and installation of the projects 1400 roof girders, and
- Reviewed subcontractor plans and submittals for job compliance.

**Geotechnical Engineer  
Needham, MA**

**The Geotechnical Group, Inc.  
1992- 1997**

- Performed geotechnical engineering studies and provided clients with a detailed report on a site's soil conditions, recommended foundation type, bearing capacity, and earthwork methodologies,
- Responsible for the field observation of earthwork operations at residential, commercial, and industrial sites and documenting observations through daily field reports,
- Provided recommendations to clients and earthwork contractors on feasible methods of performing earthwork activities while considering the most cost efficient technique,
- Recommended and observed the installation of numerous foundation systems, and
- Interacted with clients and contractors regarding, earthwork progressions, field soil conditions, and different methodologies in performing earthwork activities.

**EDUCATION**

Northeastern University  
Boston, MA

Master of Science Degree, Civil Engineering  
June 2000

Northeastern University  
Boston, MA

Bachelor of Science Degree, Civil Engineering  
June 1994

**LICENSES/CERTIFICATIONS**

Massachusetts P.E., License No. 41662  
New Hampshire P.E., License No. 14056  
OSHA 10 and 30 Hour Certification  
OSHA 40 hour Hazwoper  
Crane and Scaffolding Safety, 1998  
ASCE Member 332876

**SKILLS**

Software: AutoCAD, Microsoft Office, Expedition, Primavera Project Planner, Bentley Software Structural Analysis Software, CivilTech Allpile Structural Analysis Software.