Trey Dykstra PE

Geotechnical Engineer

Mr. Dykstra is a Geotechnical Engineer with experience in a wide range of projects that include roadways, bridges, commercial, developments, industrial developments and landfills. Past responsibilities include project management, planning subsurface investigation programs, performing geotechnical engineering studies, preparing design reports, preparing project specifications, conducting construction inspections, and managing field staff.

EDUCATION

Bachelor of Science, Civil Engineering, Syracuse University, Syracuse, New York, 1993

Master of Science, Civil Engineering - Geotechnical Program, Syracuse University, Syracuse, New York, 1996

REGISTRATIONS

Professional Engineer #13145, State of Maine

Professional Engineer #48160, Commonwealth of Massachusetts

Professional Engineer #10265, State of New Hampshire

Professional Engineer #96197, State of Vermont

PROJECT EXPERIENCE

Attractions, Arts & Entertainment

Mount Wachussets Observation Tower, Princeton, Massachusetts

Project engineer responsible for a geotechnical study for the design of a 75-foot tall observation tower. Four test pits were excavated to expose the bedrock surface and one test boring was drilled to retrieve bedrock cores for evaluation. Pepared a report with recommendation for supporting the proposed sturcture on bedrock and using rock anchors to resist overturning forces.

Bridges

VT Route 30 over the Winhall River, Jamaica, Vermont

Project engineer for a geotechnical evaluation for a bridge that suffered scour damage during the flood event resulting from tropical storm Irene in the fall of 2011. During the flood event the east abutment of the 100-foot long was undermined and settled several inches. The flood waters also cause significant erosion behind the abutment. Shortly after the flood a local contractor filled the void below the east abutment footing with grout and backfilled behind the abutment. The work was performed in an emergency situation and did not have any engineering oversight. Two test borings were drilling behind the abutment, through the footing and underlying grout and penetrated into undisturbed naturally deposited soils. The test boring data was evaluated and an opinion of the stability of the footing was provided to the bridge engineer in the form of a brief report.

Gallison Hill Road Culvert Replacement, Montpelier, Vermont

Project engineer for a geotechnical study of the replacement of a 9 foot diameter steel culvert that was destroyed by a flood. Conducted a subsurface exploration program consisting of two test borings to evaluate the subsurface conditions in the area of the new culvert. Prepared an engineering report with geotechnical design recommendations for a three -sided concrete box culvert.

Trey Dykstra PE

Geotechnical Engineer

Railroad Bridge 501 over The White River, Hartford, Vermont

Provided geotechnical recommendations for a railroad bridge severely damaged by tropical storm Irene. One of the piers located in the river was undermined by scour and settled approximately 5 feet. Geotechnical aspects of the project included providing recommendations for the design and construction of two temporary pile bents to support the bridge structure. Due to time constraints recommendations were based on limited subsurface information and design modifications were made as the construction progressed. Once the temporary bents were in place and rail traffic resumed, final geotechnical recommendations for a permanent drill shaft foundation bearing in bedrock were provided. Recommendations were based on the AREMA code.

Bridge No. 49, Roberts Road over Gulf Stream Brook, Woodstock, Vermont

Project manager for a geotechnical evaluation for the replacement of a bridge that suffered severe damage during the flood event resulting from tropical storm Irene in the fall of 2011. The bridge was approximately 56 feet long and founded on spread footings. During the flood event the footings were undermined causing the superstructure to partially collapse into the brook. The proposed replacement bridge is expected to be on the order of 75 feet in length. Two test borings were drilled to evaluate the subsurface conditions. A report was prepared with recommendations for allowable bearing capacity, estimated settlement, lateral earth pressures, seismic design parameters, and dewatering. Due to the presence of cobbles and boulders it was determined that integral abutments were not practical, however the site was suitable for semi integral abutment founded on spread footings.

Route 20 /Route 8 over Palmer Brook, Becket, Massachusetts

Project engineer responsible for a geotechnical study for the replacement of a single span bridge over Palmer Brook. The bridge footings were undermined during the flooding caused by tropical storm Irene. Prepared a geotechnical engineering report using the AASHTO LRFD code and the 2009 MassDOT LRFD Bridge Design Manual for the bridge replacement. The existing bridge will be replaced with a three-sided concrete box culvert founded on naturally deposited soil. Recommendations included bearing capacity, settlement, sliding resistance, lateral earth pressures and seismic design parameters for bridge abutments and wingwalls.

Route 106 over the Hockomock River, West Bridgewater, Massachusetts

Project manager responsible for the geotechnical evaluation for the replacement of an existing stone arch bridge. The existing bridge has a clear span of 31 feet and was constructed in two portions. The age of the older portion is unknown and is constructed of irregular stones. The newer portion of the bridge was constructed in 1948 and consists of a cast-in-past concrete arch with a stone facade. The replacement bridge will be located along the same alignment as the existing bridge but will have a larger opening. Five test borings, three series of probes and three test pits were conducted at the site to evaluate the subsurface conditions at the site. A report was prepared with recommendations for allowable bearing capacity, estimated settlement, lateral earth pressures, seismic design parameters, and dewatering. Recommendations were provided in accordance with the 2009 MassDOT Bridge Design Manual and the 2010 AASHTO LRFD code. The bridge will likely be founded on spread footings bearing on compacted structural fill placed over naturally deposited soils.

Cooleyville Road over Swift River, Wendell, Massachusetts

Project engineer responsible for a geotechnical study for the replacement of a single span bridge over the Swift River. Prepared a geotechnical engineering report using the AASHTO LRFD code and the MassDOT LRFD Bridge Design Manual for the bridge replacement. The existing bridge will be replaced with a three-sided concrete box culvert. Recommendations included bearing capacity, settlement and sliding resistance for bridge abutments and wingwalls.

Missiquoi Bay Bridge and Causeway Reconstruction*, Alburg-Swanton, Vermont

Field Engineer involved with the subsurface exploration program for the reconstruction of approximately 2,500 of causeway and a 1,200 foot long bridge through the Missiquoi Bay at the northern end of Lake Champlain. Responsibilities included monitoring a subsurface investigation consisting of test borings, piezocones, field vane shear testing and the collection of undisturbed piston samples of soft clay.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Interstate 91Bridge Widening*, Guilford, Vermont

Project manager responsible for providing geotechnical design recommendations for the widening of a three-span bridge over a river valley. The bridge abutments were recommended to be founded on H piles driven through embankment fill and bearing in the underlying glacial till. Recommended the piers be supported on spread footings bearing on glacial till. Due to the steep terrain surrounding the bridge, one lane of the highway was closed while a crane lowered and raised the drill rig to and from the borehole location in the river valley.

Bridge No. 36 Over Tabor Branch River, Corinth, Vermont

Project manager responsible for conducting a subsurface investigation, laboratory testing program and preparing a geotechnical engineering report for the replacement of an existing 44 foot long single span bridge. The proposed replacement structure will be a single span bridge with a length of approximately 55 feet. The bridge will be founded on cast-in-place concrete abutments founded directly on bedrock. Laboratory tested include unconfined compression testing of bedrock samples. Foundation recommendations in our report were made in accordance with the AASHTO LRFD Bridge Design Specifications, 6th Edition/2012. Engineering was completed in 2013.

Main Street Over Sleepers River, St Johnsbury, Vermont

Project manager responsible for conducting a subsurface investigation, laboratory testing program and preparing a geotechnical engineering report for the replacement of an existing three span bridge constructed in 1929. The proposed replacement structure will be a single span bridge with a length of approximately 90 feet. The bridge will be founded on integral abutments and H-pile driven to refusal on bedrock. The H-piles were necessary due to scour concerns. The pile capacity and driveability analysis were conducted using the GRL-WEAP software. The integral abutment was performed using the simplified method and LPile software. Foundation recommendations in our report were made in accordance with the AASHTO LRFD Bridge Design Specifications, 6th Edition/2012.

Dams & Levees

Levee Safety Periodic Inspection, Arkansas

Performed levee periodic inspections (PI) to verify proper operation and maintenance, evaluate operational adequacy and structural stability, review design criteria to validate current design standards are met, identify features to monitor over time, and improve communication of the overall system condition. The PI process included preparation of a project plan, data collection, design criteria review, pre inspection packet preparation, field inspection, and preparation of the PI report. Performed inspections of three levee systems totaling approximately35 miles of earthen levee along the Arkansas River in western Arkansas.

Hewittville Hydroelectric Plant*, Hewittville, New York

Project manager responsible for providing geotechnical recommendations to remedy seepage through a dam located on the Raquette River in upstate New York. A visual inspection of the facility revealed a significant amount of seepage at the toe of the concrete spillway, seepage at the toe of an earth embankment and sinkholes in a gravel parking lot downstream of the dam. Developed and implemented a subsurface investigation based on historic drawings of the original dam constructed of rock filled timber cribs and later modified with a concrete cap to increase the height. Verified the presence of a boulder layer through which water was flowing causing the sinkholes in the parking area, and seepage in the spillway area was from the underlying rock filled timber cribs based on data reduced from the 13 test borings, 7 groundwater observation wells, bedrock packer testing and tracer dye testing. Prepared a geotechnical engineering report providing various grouting methods to fill the voids in the boulder layer and the rock filled cribs. Made recommendations for surficial treatment of the seepage areas along the toe of the earth berm to prevent erosion.

Education

Pondside II Housing Development, Keene State College*, Keene, New Hampshire

Project manager responsible for design recommendations for the construction of five three-story dormitories. Subsurface conditions included soft clay deposits up to 35 feet in thickness. The dormitories were founded on steel H-piles bearing on bedrock or in very dense glacial till. Observed a static load test conducted on one of the H-piles and reviewed the test results. Reviewed field engineer's pile installation field reports.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Spaulding Gymnasium Addition, Keene State College*, Keene, New Hampshire

Project manager responsible for providing design recommendations for an addition to a large gymnasium. The subsurface conditions below the addition included soft glaciolacustrine clay deposits ranging from 35 to 65 feet in thickness. Recommended the addition be founded on steel H-piles driven to refusal in very dense glacial till. Piles were driven within 10 feet of the existing structure which required vibration monitoring. Observed a static load test conducted on one of the H-piles and reviewed the test results. Reviewed the field reports produced by a field engineer during pile installation.

Healthcare

Lakes Region General Hospital, Laconia, New Hampshire

Conducted a supplemental geotechnical investigation for a seven-story addition to the existing hospital. Subsurface conditions consisted of miscellaneous urban type fill, glacial till and bedrock. Prepared a geotechnical engineering memorandum with recommendations for the design of a portion of the addition which could not be explored during the initial phase of work. Also provided a design for underpinning a portion of the existing hospital building to allow construction of the basement portion of the addition. During construction we conducted several site visits to observe the surface conditions encountered at the footing bearing elevations and provided recommendations for dealing with construction related issues. In particular, provided recommendations for using H-piles driven to bedrock to support a portion of the building rather than excavating a large area of unsuitable fill and replacing with compacted imported fill. Excavating the fill would have interfered with the flow of pedestrian traffic into the building entrance.

Industrial

Bath Iron Works Land Level Transfer Facility*, Bath, Maine

Project manager responsible for overseeing a team of approximately 10 field engineers monitoring the construction activities at the Bath Iron Works facility for a three month period. The project consisted of a 10-acre dry dock constructed in or above the Kennebec River. The project required the installation of ninety 8-foot diameter drilled shafts, approximately 1,500 steel H-piles, 1,200 precast concrete piles, 26 coffer cells and vibro-compaction of loose dredge sand fill.

Biomass Power Plant, Berlin, New Hampshire

Project manager responsible for developing geotechnical engineering recommendations for a biomass power plant. Recommendations were provided for several structures including a turbine house, wood processing building, pollution control facilities, large conveyors, and an addition to an existing boiler house. Some of the buildings housed large pieces of machinery there are sensitive to settlement. Subsurface conditions at the majority of the site consisted of bedrock. However, a deep deposit of demolition debris was present in a portion of the site. Foundation recommendation included bearing capacities for footings bearing on competent bedrock on the order of 40 kips per square foot. Design recommendations were provided for rock anchors used to resist uplift forces on the buildings. In areas of unsuitable bearing materials recommendations were provided for supporting the buildings on drilled micro-piles.

Gas Pipeline Relocation, Falmouth, Maine

Project manager responsible for conducting a subsurface investigation, laboratory testing program and prepared a geotechnical engineering report for the relocation of an 8 inch diameter gas pipeline. Stantec also prepared the contract plans and specifications; and obtained permits from the Town, State and Federal agencies. The existing pipeline crosses under the northbound and southbound lanes of the Maine Turnpike via the Piscataqua river channel. The Maine Turnpike Authority (MTA) requested that Unitil relocate the pipeline south of the existing bridge over the Piscataqua prior to reconstruction of the bridge deck. Stantec selected horizontal directional drilling as the method to relocate the pipeline. The length of the drilling path is approximately 600 feet long.

Stantec personnel observed the drilling of four test borings to depths ranging from 60 to 70 feet below the ground surface. Three of the borings were accessed from the highway and required traffic control. The test borings encountered the Presumptscot formation which is typical of coastal Maine. Laboratory test included sieve analyses and Atterberg limits. A geotechnical report was prepared containing a summary of the subsurface conditions and recommendations for the drilling process.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Pavement Investigations

Parking Lot Study, Winchendon, Massachusetts

Project engineer responsible for a geotechnical study of an asphalt pavement parking lot with severe cracking, settlement, rutting and frost damage. The pavement was 17 years old and had begun to show signs of distress a few years after construction. Areas of heavy traffic volumes were completed failed. To evaluate the pavement and soil base course soils a subsurface investigation program consisting of nine test borings was conducted. A 3-inch diameter split spoon was used to collect the soil samples. Three groundwater observation wells were installed in completed borings. Conducted laboratory testing program consisting of two sieves analyses to classify the soils and develop soil properties. A geotechnical engineering report was prepared that explained the cause of the premature pavement failure and provided recommendations for repairing the parking lot. Recommendations included full depth reconstruction with a system of underdrains to lower the groundwater table below the parking lot area.

Parking Lot Study, Pawtucket, Rhode Island

Project engineer responsible for a geotechnical study of an asphalt pavement parking lot with severe cracking and settlement. The pavement was 17 years old and had begun to show signs of distress several years prior to our investigation. To evaluate the pavement and base course soils a subsurface investigation program consisting of eight test borings was conducted. A 3-inch diameter split spoon was used to collect the soil samples. Conducted a laboratory testing program consisting of four sieves analyses to classify the soils and develop soil properties. A geotechnical engineering report was prepared that explained the cause of the premature pavement failure and provided recommendations for repairing the parking lot. Recommendations included full depth reconstruction; reclaiming the asphalt surface in-place; and milling and overlaying. Recommendations were also provided for concrete slabs in the drive through lanes.

Power Transmission & Distribution

McIndoes Hydro Station, McIndoes, Vermont

Project engineer responsible for a geotechnical study for an electrical substation associated with a hydro power plant on the Connecticut River. The substation will consist of a high side switch, low side switch and a transformer. The subsurface investigation consisted of 6 test borings. Bedrock was encountered at the ground surface to a depth of 11 feet below grade. Laboratory testing program consisted of unconfined compression test on three bedrock samples. Prepared a geotechnical engineering report that including recommendations for support of the proposed structures. Field electrical resistivity testing was also conducted at the site.

Rumford Falls Hydro Interconnect, Rumford, Maine

Project engineer responsible for a geotechnical study for an electrical substation, electrical control house and power line support poles associated with a hydro power plant. The subsurface investigation consisted of 13 test borings and a field electrical resistivity testing. Prepared a geotechnical engineering report with recommendation for support of the proposed structures and retaining wall. Provided soil parameters for use in LPile analysis.

Goebel Street Substation, Berlin, NH

Project manager responsible for conducting a geotechnical study for the design and construction of an electrical substation. The substation will consist of a transformer, switches, control house and tower structure. The subsurface investigation consisted of 4 test borings and numerous ledge probes. Bedrock was encountered at the ground surface to a depth of 8 feet below grade. Laboratory testing program consisted of unconfined compression test on a bedrock sample. Prepared a geotechnical engineering report that included recommendation for bearing capacity, settlement, bedrock removal, subgrade preparation and rock anchors.

Railroads

Railroad Embankment Remedial Design*, Middlesex, Vermont

Project engineer for a geotechnical study of an unstable railroad embankment. The unstable embankment was approximately 300 feet long, 50 feet high and had a slope of 1.3 horizontal to 1 vertical. A computer model was used to calculate the existing factor of safety and to evaluate the several remedial alternatives. The slope was stabilized by adding a layer of rip rap that reduced the angle of the slope.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Embankment Stability Evaluation, Clarendon & Pittsford Railroad*, Hampton, Vermont

Project engineer for a geotechnical study of an unstable railroad embankment. The unstable embankment was approximately 1,000 feet long, ranged from 10 to 25 feet high and had side slopes of 1.8 horizontal to 1 vertical. Used subsurface information obtained from test borings to develop a model of subsurface conditions that generally consisted of fine grained soils. Evaluated several remedial alternatives, including cement-injection and lime-cement mix columns using computer stability analyses. The embankment was stabilized by the use of cement-injection of fine grained soils.

Retail

Commonwealth Yogurt*, Brattleboro, Vermont

Project manager responsible for providing geotechnical design recommendations for 40,000 square-foot food processing facility. The site development consisted of 20 foot cuts into very dense glacial till soils and fill slopes up to 20 feet high. Recommendations included bearing capacity, settlement analysis, pavement design, lateral earth pressures, seismic design parameters, reuse of on-site soils, fill slopes grades, cut slope grades and providing infiltration rate of on-site soils in accordance with the State of Vermont regulations.

Metro Credit Union*, Boston, Massachusetts

Project manager responsible for providing geotechnical design recommendations for a 7,000 square-foot bank located on Massachusetts Avenue. The subsurface conditions consist of miscellaneous fill, organic silt and natural sand deposits. Recommendations included supporting the building foundation on rammed aggregate piers or driven timber piles with a structural slab. Prepared technical specifications for earthwork and timber piles.

Retail Buildings, Numerous Sites*, Massachusetts, New Hampshire, Vermont

Project manager responsible for providing geotechnical design recommendations for several new one-story retail stores ranging from 10,000 to 100,000 square feet. Store tenants included CVS, Walgreens, Target and Wal-Mart. Subsurface conditions included sand deposits, glacial till, miscellaneous urban fills, organic silts, shallow bedrock and marine clay. Several of the proposed stores were founded on rammed aggregate piers to improve increase the bearing capacity of the soil and limit settlement to acceptable magnitudes. Some sites involved a preloading to limit settlements. Most of the sites involved infiltration testing of the on-site soils in accordance with state regulations. Conducted infiltration tests using borehole techniques or shallow methods such as the Guelph Permeameter.

Sharon Commons Lifestyle Center*, Sharon, Massachusetts

Project manager responsible for providing preliminary geotechnical design recommendations for a large retail development including approximately 450,000 square feet of retail and commercial space and roadway improvements on approximately 60 acres of land. The subsurface conditions consist of natural sand and gravel deposits. Conducted a significant amount of infiltration testing for proposed stormwater treatment systems.

Roadways

Applevale Area Reconstruction, Salem, New Hampshire

Project engineer responsible for a geotechnical study of approximately 8,000 feet of neighborhood type roadways. The roadways were constructed of asphaltic pavement. The pavement surface was uneven, rutted and showed signs of frost damage. A subsurface investigation program consisting of 8 test borings and 25 ledge probes was conducted to evaluate the pavement and base course soils. A 3-inch diameter split spoon was used to collect the soil samples. A geotechnical engineering report was prepared which contained recommendations including full depth reconstruction and underdrains.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Roadway Rehabilitation, Salem, New Hampshire

Project engineer responsible for a geotechnical study of four asphalt pavement roadways with a total length of approximately 4 miles. The roadways were more than 20 years old and had been patched and repaired numerous times in the past. The pavement surface was severely cracked, uneven and rutted along the majority of the roadways. A subsurface investigation program consisting of 13 test borings and 31 ledge probes was conducted to evaluate the pavement and base course soils. A geotechnical engineering report was prepared which contained recommendations including full depth reconstruction and reclaiming the asphalt surface in-place.

Kancamagus Highway Soil Nail Wall Design*, Albany, New Hampshire

Project engineer responsible for the design of two soil nail walls located along the Kancamagus Highway. The walls are approximately 450 and 600 feet long, and 20 feet and 22 feet high. Developed an instrumentation program to monitor the short term and long term performance of the retaining walls. The program consisted of inclinometers, vibrating wire piezometers, groundwater observation wells and thermistors. Observed sacrificial test nails and proof testing of the production nails during construction.

I-93, Exit 13 Interchange Reconstruction*, Concord, New Hampshire

Project engineer for geotechnical studies for the relocation of approximately 18,400 feet of interstate highway and associated ramps, construction of two bridges (170 feet and 240 feet in length) and the construction of approximately 1,800 feet of grade separation structures. Analyzed subsurface information obtained from test borings and developed geotechnical engineering recommendations for the proposed construction. Recommendations included roadway section design, underdrain design, cut slope design, fill slope design, bearing capacity of soils, bridge abutment foundation support and grade separation structures.

NH Route 123 Sheet Pile Wall*, Walpole, New Hampshire

Project engineer for a geotechnical study of the installation of a waler and tieback system for a sheet pile wall installed below the Route 123 roadway. The sheet pile wall was installed to allow the reconstruction of the roadway following failure of the roadway embankment. The sheet pile wall was originally intended to be a temporary fix; however, perfomed analysis to determine the existing system could be made permanent using tiebacks to increase the factor of safety to an acceptable level.

NH Route 125*, Plaistow/Kingston, New Hampshire

Project engineer responsible for conducting a geotechnical study for the widening of approximately 2 miles of highway and associated retaining structures, culverts and traffic signal foundations. Analyzed subsurface information obtained from test borings and developed geotechnical engineering recommendations for proposed construction. Recommendations included extra sand for roadway base courses, underdrain locations, rock cut slope design, soil cut slope design, fill slope design, bearing capacity of soils, grade separation structures, rock removal limits and muck removal limits.

NH Route 123*, Alstead, New Hampshire

Project engineer for geotechnical studies of portions of Route 123 roadway and associated bridge structures that were severely damaged by flooding in October 2005. Prepared geotechnical engineering reports using AASHTO LRFD code for three bridge replacements. Recommendations included bearing capacity, settlement and sliding resistance for bridge abutments and wingwalls. Prepared geotechncial engineering report for the Route 123 roadway that included recommendations for underdrains, cut slopes and fill slopes.

Bennington Route 279 North*, Bennington, Vermont

Project engineer for geotechnical design recommendations of approximately 2.2 miles of new roadway. Developed the subsurface exploration program for the roadway and two major bridge structures approximately 550 and 600 feet in length. Design recommendations included roadway section design, underdrain design, cut and fill slope design, bearing capacity of soils, bridge abutment and pier support, and grade separation structures. A slope stability analysis was conducted for 35 foot high soil cut slopes. Prior to conducting the stability analyses test borings were drilled to evaluate subsurface conditions and to install vibrating wire peizometers.

** denotes projects completed with other firms*

Trey Dykstra PE

Geotechnical Engineer

Solid Waste

Nyanza Superfund Site*, Ashland, Massachusetts

Project engineer responsible for estimating settlement of organic silt contaminated with mercury placed within a superfund hazardous waste landfill. Calculated the thickness and duration of surcharge necessary to limit the settlement of the landfill cap system to within design requirements. Also reviewed field compaction data conducted with a nuclear moisture-density gauge and sand cone equipment.

Vertical Expansion of Peabody Landfill*, Peabody, Massachusetts

Project engineer responsible for analyzing stability of multiple interfaces associated with vertical expansion of an existing municipal solid waste landfill for residual sewage sludge disposal. Summarized recommendations relative to stability evaluations in an engineering report. The vertical expansion was proposed to occupy a footprint area of 21 acres, have a capacity of 965,000 cubic yards (maximum 85 feet in height) and be constructed over a maximum refuse thickness of approximately 90 feet.

Reinforced Access Roadway Berm at Peabody Landfill*, Peabody, Massachusetts

Project and field engineer for the design and construction of a geosynthetic reinforced roadway berm constructed on the cap of an existing municipal solid waste landfill with a side slope ratio of 1.5 horizontal to 1 vertical. Prepared contract plans and specifications used for construction. Monitored the daily construction activities of the berm, which included length, spacing and strength of the geosynthetic reinforcement, and placement of backfill material. Performed field quality control testing of compacted fill using a portable nuclear moisture-density gauge. Prepared daily field reports and submitted reports to the project manager.

Water

Town Forest Water Tank, Groveland, Massachusetts

Project engineer responsible for providing geotechnical design recommendations for a 0.8 million gallon municipal water storage tank. The project involved drilling four test borings and providing a report in accordance with the manufacturer's requirements and AWWA standards.

Woodsville Water Treatment Plant*, Woodsville, New Hampshire

Project manager responsible for providing geotechnical design recommendations and construction bid package to remedy floor and wall settlement of a water treatment plant located adjacent to a sluiceway for a small hydroelectric generating station. Recommended grouting to support the structure and limit future settlement based on the presence of loose sand below the existing structure and the potential for migration of soil below the structure. Reviewed proposed grouting program developed by the contractor for suitability for the site.

Airports & Aviation

Training Facility, Burlington International Airport, So. Burlington, Vermont

Project manager responsible for providing geotechnical design recommendations for the design and construction of a 23,600 square foot aviation school and hanger facility. The proposed facility is located on land filled with approximately 25 feet of soil and placed with limited quality control. Stantec observed six test borings to evaluate the density and nature of the fill soils. Laboratory test were also conducted on soil samples retrieved from the borings. Due to loose deposits of fill we recommended that rammed aggregate piers be used to improve the fill soils so that the proposed structure could be constructed on conventional spread footings. Once the soils are improved, settlement of the building is expected to be within acceptable limits.

** denotes projects completed with other firms*

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PUBLICATIONS

Stulgis, R.P., Dykstra, T.A., Telgener, R.J., Oosterbann, M.D. and Hubbard, A.B., "Design and Construction of a Permanent Soil Nail Wall: A Case Study". *Proceedings of the International Symposium on Mechanically Stabilized Backfill, Denver, Colorado*, 1997.