

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
ENERGY FACILITY SITING BOARD**

**IN RE: INVENERGY THERMAL DEVELOPMENT LLC's  
APPLICATION TO CONSTRUCT THE  
CLEAR RIVER ENERGY CENTER IN  
BURRILLVILLE, RHODE ISLAND**

**DOCKET No. SB-2015-06**

**PRE-FILED DIRECT TESTIMONY OF  
KEITH MACDONALD**

**(JUNE 30, 2017)**

## **SUMMARY**

Keith MacDonald, P.E. is a Senior Project Engineer for Pare Corporation and testifies regarding the Physical Alteration Permit application that is pending with Rhode Island Department of Transportation (“RIDOT”). He describes the plans for a new driveway access to the Project site as consistent with the rules and requirements for RIDOT permit application. Mr. MacDonald, relying on his experience and expertise, the application as supplemented, relevant RIDOT rules and regulations, and information submitted to RIDOT, opines that the RIDOT permit application will be in conformance with all relevant RIDOT rules and regulations.

## LIST OF EXHIBITS

KM-1      *Curriculum Vitae*

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CORPORATION**

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**I. INTRODUCTION**

**Q. PLEASE STATE YOUR NAME, BUSINESS TITLE AND BUSINESS ADDRESS.**

**A.** My name is Keith MacDonald. I am a Senior Project Engineer at Pare Corporation (“Pare”), located at 8 Blackstone Valley Place, Lincoln, Rhode Island.

**Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

**A.** My testimony is on behalf of the applicant, Invenergy Thermal Development, LLC (“Invenergy”), in support of its application for a license from the Rhode Island Energy Facility Siting Board (“EFSB” or “Board”) to construct the Clear River Energy Center project in Burrillville, Rhode Island (“Clear River” or “CREC”).

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.**

**A.** I have a B.S. in Civil & Environmental Engineering from the University of Massachusetts at Dartmouth. I have been an engineer at Pare Corporation since 1999. I have been involved in a wide range of transportation and site/civil engineering projects providing permitting, design, analysis, and field services. I have provided study, design, and review services for roadway improvements, traffic studies and traffic designs, and stormwater management. A detailed description of my educational background and professional experience is included in my CV attached as **Exhibit KM-1**.

1 **Q. PLEASE DESCRIBE YOUR EXPERIENCE PROVIDING TESTIMONY TO**  
2 **REGULATORY COMMISSIONS, BOARDS, AGENCIES OR AS AN EXPERT.**

3  
4 **A.** I have appeared before municipal planning and zoning boards, as well as presenting to  
5 various state agencies, such as the Rhode Island Department of Transportation (“RIDOT”) and  
6 the Rhode Island Department of Environmental Management (“RIDEM”) regarding projects I  
7 have been involved with.

8 **II. ANALYSIS**

9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

10  
11 **A.** The purpose of my testimony is to describe the Physical Alteration Permit (“PAP”)  
12 application that is pending review with RIDOT.

13 **Q. DESCRIBE YOUR INVOLVEMENT IN THE PAP APPLICATION PROCESS?**

14  
15 **A.** I was involved in the preparation of the PAP Application, including preparing a cost  
16 opinion of the proposed driveway work within the right-of-way. I also coordinated with the  
17 RIDOT Permits Section regarding the application submission.

18 **Q. WHAT DID YOU REVIEW WHEN CONDUCTING YOUR ANALYSIS AND**  
19 **WORKING ON THE PAP APPLICATION?**

20  
21 **A.** I reviewed the RIDOT PAP Application, the RIDOT “Rules and Regulations Concerning  
22 Permission for Use of State Highway Rights-of-Way”, the RIDOT PAP submittal checklist and  
23 instructions. I also compiled the drawing package for Stormwater Management prepared by  
24 HDR Engineering dated September 2016, and filed with the Board as part of Invenergy’s  
25 Freshwater Wetlands Application, the Drainage Design Statement prepared by HDR Engineering  
26 dated November 21, 2016 and the Traffic Impact Study prepared by McMahon Associates dated  
27 May 2016, which was previously filed with the Board.

28

1 **Q. PLEASE EXPLAIN THE METHODOLOGY UTILIZED WHEN CONDUCTING**  
2 **YOUR ANALYSIS AND WORKING ON THE PAP APPLICATION**

3  
4 **A.** I reviewed the RIDOT website for the latest PAP application, checklist, and instructions.  
5 I reviewed the drawings and drainage statement by HDR and the traffic impact study by  
6 McMahon for general content to be familiar with the submitted material.

7 **Q. PLEASE DESCRIBE CREC'S PAP APPLICATION?**

8  
9 **A.** CREC's PAP Application is for a new driveway access to the proposed facility from  
10 Wallum Lake Road – Route 100 in Burrillville. There is no direct tie-in to the State road  
11 drainage system as part of this application, and therefore HDR has provided a drainage statement  
12 indicating that there is no negative impact to the State's drainage system. Included in the PAP  
13 Application submission is the signed PAP Application, the drawing package for Stormwater  
14 Management prepared by HDR Engineering dated September 2016, the Drainage Design  
15 Statement prepared by HDR Engineering dated November 21, 2016, the Traffic Impact Study  
16 prepared by McMahon Associates dated May 2016, the cost opinion of proposed work within the  
17 right-of-way, and a check for the application fee.

18 The other materials submitted to RIDOT include a supplemental traffic analysis dated  
19 January 10, 2017, as included in the Water Supply Plan submitted to the ESFB on January 11,  
20 2017, updated Stormwater Design Plans, dated March 27, 2017, which was filed with the Board  
21 as part of Invenergy's Stormwater Management Plan filed with RIDEM. HDR is preparing an  
22 updated Drainage Design Statement which will be submitted to RIDOT when complete.

23 **Q. PLEASE DESCRIBE THE STATUS OF THE RIDOT REVIEW OF THE PERMIT**  
24 **APPLICATION?**

25

1 A. The permit is pending review by RIDOT. It is my understanding that the EFSB has the  
2 statewide permitting authority for these types of permits and will guide RIDOT as necessary. I  
3 am prepared to answer any questions that the RI EFSB has in regards to this permit application.

4 **III. CONCLUSIONS**

5

6 **Q. IN YOUR EXPERT CAPACITY, DO YOU HAVE AN OPINION TO A**  
7 **REASONABLE DEGREE OF CERTAINTY REGARDING WHETHER CREC'S**  
8 **PAP APPLICATION IS CONSISTENT WITH THE RULES AND REGULATION**  
9 **REQUIREMENTS FOR RIDOT PERMIT APPLICATIONS?**

10

11 A. Yes. It is my opinion that the CREC's PAP Application is consistent with the rules and  
12 regulation requirements for RIDOT permit applications.

13 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

14 A. Yes.

15

# **EXHIBIT KM-1**





#### **REGISTRATIONS AND CERTIFICATIONS**

Professional Engineer –  
Rhode Island,  
Massachusetts

OSHA Hazardous Waste  
Operations 40-Hour Health  
and Safety Training

OSHA Construction Safety  
10-Hour Training

OSHA Hazardous Waste  
Operations 8-Hour  
Supervisor Training

#### **EDUCATION**

University of Massachusetts,  
Dartmouth, MA:  
B.S., Civil & Environmental  
Engineering, 1998

Asphalt Institute,  
Lexington, KY:  
Superpave Mix  
Design Course

#### **RELEVANT EXPERIENCE**

Mr. MacDonald provides design, analysis, and field services for a wide variety of transportation and site/civil engineering projects. He has provided study, design, and review services for roadway improvements, traffic studies and traffic designs, stormwater management, intersection improvements, sidewalk and streetscape improvements, bridge approaches and decks, maintenance and protection of traffic during construction, and construction inspections. Mr. MacDonald has served as a part-time visiting lecturer for Traffic Engineering at the University of Massachusetts Dartmouth. Relevant experience includes:

##### ***Traffic/Transportation Projects***

- **North Smithfield Town-wide Roadway Improvements** – Project Engineer for the study, design and construction services for the rehabilitation of 13.5 miles of various Town roadways. The scope of services included field reviews of all roadways, assessing pavement conditions, prioritizing capital needs based on \$2,500,000 budget and recommendations of roadway and drainage rehabilitation methods. Services entailed preparing design plans using GIS aerial mapping, engineer's estimates, specifications, preparing contract bid documents for advertising and providing full-time observation services during construction for the Town. North Smithfield, RI.
- **Orion Retail Services Driveway Physical Alteration Permit Application:** Senior Engineer responsible for design of driveway access to the Orion Retail Services Facility on Jenckes Hill Road. Included in the project was obtaining a Physical Alteration Permit Application approval from the Rhode Island Department of Transportation. Smithfield, RI.
- **Johnson & Wales University – Roadway Improvements:** Project Engineer for two roadway improvement projects at Johnson & Wales Harborside Campus. Upgrades to Harborside Boulevard included full-depth reconstruction of the existing roadway, and replacement and/or installation of sidewalks. Improvements to Shipyard Street involved curbing and sidewalks on both sides of the road, improving the stormwater drainage system, pavement restoration, and incorporating traffic-calming measures such as raised crosswalks and curb bumpouts. Construction observation was provided for Shipyard Street. Providence, RI.
- **Reconstruction of Shun Pike and Scituate Avenue – Rhode Island Resource Recovery Corporation:** Senior Engineer responsible for drainage design for the reconstruction of approximately one mile of Shun Pike and Scituate Avenue, including widening of the roadway from two existing lanes to four lanes. Johnston, RI.
- **RIDOT Route 104:** Staff Engineer responsible for compiling design plans and for the distribution of quantities and contract documents for this 3.8-mile reconstruction of Route 104. A subsequent contract dealt with drainage issues on one segment of the roadway. North Providence/Smithfield/North Smithfield, RI.
- **Woonsocket Middle School Traffic Study and Signal Improvements:** Project Engineer for a study on the safety and capacity of the adjacent roadway system and nearby intersections for the relocated middle school. Based on the results of the study, a new signal was designed at the main school entrance and coordination was recommended with nearby signals.

Improvements also included signing and striping improvements on roadways adjacent to the school. Woonsocket, RI.

- **City of Cranston – Safe Routes to School Projects:** Project Engineer for an SRTS program at two City middle schools and a total of ten associated elementary schools. Responsible for field observations to study existing conditions, preparation of a Design Study Report with recommendations for each site, and development of preliminary plans for improvements. Cranston, RI.
- RIDOT – Safe Routes to School: Central Falls, RI.
- **Cold Spring Brook Place:** Project Engineer for traffic engineering services provided for a mixed use development. Investigated traffic capacity and safety issues to provide off-site mitigation to improve the traffic conditions on the surrounding roadway network. Off-site improvements consist of 5,200 linear feet of roadway improvements extending in all 4 directions from the intersection of Providence Turnpike (Route 146) and Boston Road. The mitigation also includes the redesign of the signalized intersection at the Route 146/Boston Road intersection and a new traffic signal at the Boston Road site entrance. Sutton, MA.
- **Town of Westport - Central Village Pedestrian & Bike Safety Improvements:** Project Manager for feasibility study followed by design of roadway/streetscape improvements to approximately 1,250-lf of Main Road to increase safety for pedestrians and bicyclists. Improvements include new sidewalk & curbing, ADA improvements, crosswalks, traffic calming features, stormwater handling, and landscaping. Westport, MA.
- **Town of Bristol - Chestnut Street Improvements:** Project Manager for the design of improvements to the approximate 0.9-mile section of Chestnut Street extending from the intersection of Hope Street to Metacom Avenue to upgrade the rideability of the pavement surface of the roadway, replace the curbing and sidewalks, and improve drainage along the roadway. Bristol, RI.
- **Babcock Road Improvements:** Project Engineer for design of improvements to 2,300 feet of roadway within the Quonset Business Park. Improvements included revisions to the horizontal and vertical alignment, drainage improvements, including a new stormwater detention basin, and utility improvements. Included in the utility improvements was the design of approximately 500 feet of gravity sewer main and building services. North Kingstown, RI.
- **RIDOT 1R Program – Group 1:** Project Engineer for engineering services for the rehabilitation of over 12 miles of various roadways in northern Rhode Island which include improvements to the riding surface of the roadway; resetting frames, grates, and covers of utilities; resetting/ replacing curbing and sidewalks; safety improvements such as replacing damaged guardrail and installing new guardrail where warranted; investigating and providing ADA-compliant facilities; and investigating existing traffic control signals and upgrading equipment where necessary. Various locations – RI.
- **RIDOT 1R Improvements to Route 4:** Senior Project Engineer for the rehabilitation of 4.2 miles of Route 4 within two sections in North Kingstown and East Greenwich and 0.9 miles of ramps at the Division Street. His

responsibilities included scoping and managing the preparation of an initial project report as part of the study and design development phase. Tasks for this project include data collection, field reviews, safety analyses, guide sign inventory, capacity analyses at three signalized intersections, and coordination with the local communities and utility companies. This project is currently at the final design stage with construction to begin in the spring of 2015. North Kingstown and East Greenwich, RI.

- **RIDOT 1R Improvements to State Route 146:** Senior Project Engineer for the rehabilitation of 1.2 miles of state highway from Route 116 to Route 99. His responsibilities included scoping and managing the preparation of an initial project report, design plans, contract documents, distribution of quantities and engineers estimates for this accelerated 1R Project that was completed within 3 months using earmark funding. The project also required the inclusion of bridge improvements provided by RIDOT. Lincoln, RI.
- **RIDOT 1R Improvements to Eddie Dowling Highway (Route 146A):** Senior Project Engineer for the rehabilitation of 1.2 miles of state highway from Route 146 to Park Avenue. His responsibilities included scoping and managing the preparation of an initial project report, design plans, contract documents, distribution of quantities and engineers estimates for this 1R Improvement project that was accelerated and completed within a 6 month period to using earmark funding. North Smithfield, RI.
- **RIDOT - 1R Improvements to Old River Road:** Senior Project Engineer for preparation of an initial project report, design plans, contract documents, distribution of quantities and engineers estimates for 1.65 miles of roadway rehabilitation from Albion Road/School Street to Sayles Hill Road in the Town of Lincoln. Proposed improvements included full-depth pavement patching, micro-milling of the two lane roadway, pavement overlay with hot mix asphalt, replacement of the existing sidewalks and granite curb, providing ADA compliant wheelchair ramps, minor geometric improvements at two intersections and providing new signage and pavement markings throughout the project limits. Lincoln, RI.
- **RIDOT - 1R Improvements to Dexter Street:** Senior Project Engineer for the rehabilitation of 1.1 miles of Dexter Street within the Cities of Central Falls and Pawtucket. His responsibilities include engineering design and managing the staff for this project that was completed in the spring of 2016. The project included preparation of an initial project report and design development that included milling the existing pavement structure, isolated repairs to the concrete roadway base, and placement of rubberized chip seal and hot mix asphalt courses. Other roadway items include reconstruction of the concrete sidewalks, including new ADA compliant wheelchair ramps, upgrading 6 traffic signals, replacement of roadway utility boxes, rehabilitation of drainage structures, signing and striping, addition of street trees, and maintenance repairs to the Dexter Street Bridge No. 935. Central Falls and Pawtucket, RI.
- **RIDOT - 1R Improvements to New River Road and Victory Highway:** Senior Project Manager for the preparation of roadway improvements to 0.46 miles of New River Road in the Town of Lincoln, and of 0.61 miles of Victory Highway (Old Route 102) in the Town of Burrillville. The work for New River encompassed milling of a two lane roadway, overlay with hot mix asphalt, and replacement of the existing sidewalks. The roadway improvements on Victory Highway entailed full depth reclamation of the

existing pavement structure and overlaying with hot mix asphalt pavement. Other work included, resetting and installation of granite curb, installation of bituminous berm, adjustment and replacement of roadway utility structures, cleaning & flushing pipes and drainage structures, reconstruction of catch basins, replacement of signs, and striping. Lincoln and Burrillville, RI.

- **East Avenue Sidewalk Project:** Project Engineer for the design of approximately 500 feet of sidewalk. Included in the design was the preparation of a Physical Alteration Permit Application for RIDOT and the preparation of permanent and temporary easements from abutting property owners. Burrillville, RI.
- **RIDOT High Hazard Intersections and Ramps C-7:** Project Engineer for analyses of 16 signalized high hazard intersections in order to design improvements to reduce the frequency and severity of crashes at these sites. Project includes field reviews, crash diagrams, analysis of roadway geometry, and signal design. North Providence and Pawtucket, RI.
- **Traffic Impact Analysis For Amgen Pharmaceutical Site Expansion:** Senior Engineer for traffic study to determine if any modifications were necessary to improve the capacity or safety of the roadway network surrounding this extensive construction project. The volume of construction personnel and employee traffic was exceeding original projections. Recommendations included modifications of existing traffic signal phasing and optimization of signal timings. West Greenwich, RI.
- **Traffic Impact Analysis for Amgen Pharmaceutical Temporary Parking Lot:** Senior Engineer for study to investigate the impact of the proposed construction of a temporary 1,600-space parking lot on the safety and capacity of the adjacent roadway system and nearby intersections. West Greenwich, RI.
- **Traffic Impact Analysis – Proposed Dunkin Donuts:** Senior Engineer for study to investigate the impact of the proposed construction of a Dunkin Donuts store with drive-thru on traffic volumes and safety of the adjacent roadway, parking lot, and intersections. Seekonk, MA.
- **Traffic Impact Analysis for New Commercial Development:** Senior Engineer for study to investigate the potential impacts this proposed 1.94-acre commercial development will have on the safety and capacity of West Main Road and the surrounding roadway network. Portsmouth, RI.
- **Traffic Impact Analysis – Proposed Dunkin Donuts:** Senior Engineer for study to investigate the impact of the proposed construction of a Dunkin Donuts store with drive-thru on traffic volumes and safety of the adjacent roadway. Cumberland, RI.
- **Aquidneck Island Planning Commission – Shoreline Drive Gateways Feasibility Study:** Senior Engineer for study of upgrade of Defense Highway as scenic Shoreline Drive. Assessed existing conditions including Navy subsurface infrastructure, crash data, topography, and stormwater management for conceptual design of intersection alternatives at the Defense Highway/Stringham Road intersection. Conducted iterative capacity analysis for diversion of traffic from West Main Road. Analyzed West Main Road intersections with Stringham Road and Gate 17 Access Road, and Gate 10/Simonpietri Drive intersection with Coddington Highway.

Coordinated with Naval Station Newport Public Works Department. Portsmouth and Middletown, RI.

- **Aquidneck Island Planning Commission – West Side Master Plan:** Senior Engineer for assessment of existing travel conditions on West Main Road, Coddington Highway, and Defense Highway. Developed Transportation Improvement Program application for left turn lanes on West Main Road. Portsmouth and Middletown, RI.
- **RIDOT Highway Performance Monitoring Stations:** Staff Engineer for the design of 200 traffic-monitoring stations throughout the RI State Highway System. The monitoring stations are necessary for RIDOT to effectively and efficiently meet the HPMS and ISTEPA traffic-monitoring requirements. Rhode Island-Statewide.
- **RIDOT Transportation Management Center (TMC):** Project Manager for PARE's involvement in the ongoing operation of RIDOT's statewide Transportation Management Center. Tasks have included developing a database of all RIDOT's ITS equipment, evaluations and preparation of design contracts for variable and dynamic message boards and for performing travel time studies. Statewide, RI.
- **RIDOT – Traffic Management Center Support Service:** Staff Engineer involved in the evaluation and design of 6 new variable message sign (VMS) boards to be located at various locations within the state's freeway and highway systems. The nature of the work was to determine the best locations and to develop the final design plans and contract documents for construction bidding. Rhode Island – Statewide.
- **RIDOT Bridge Rehabilitation/Replacement Program – Group 8, Manton Village Bridge No. 78:** Staff Engineer responsible for the design of the roadway improvements for Manton Avenue included as part of the bridge deck replacement. Tasks performed included developing the horizontal and vertical alignment of the roadway, finalizing the drainage design, utility coordination, preparing right-of-way documents, and compiling the distribution of quantities and contract documents. Providence and Johnston, RI.
- **RIDOT Bridge Rehabilitation/Replacement Program – Group 8, General Nathanael Greene Memorial Bridge No. 991:** Staff Engineer responsible for the design of the roadway improvements for Forge Road included as part of the bridge replacement. Tasks performed included developing the horizontal and vertical alignment of the roadway, finalizing the drainage design, utility coordination, preparing right-of-way documents, and compiling the distribution of quantities and contract documents. Warwick and North Kingstown, RI.
- **RIDOT Comprehensive Bridge Improvement Program – Group 6:** Senior Engineer for evaluation of geometry and physical condition of roadway approaches for four out of five bridges included in this contract to design bridge rehabilitations. Various locations, RI.
- **RIDOT Bridge Rehabilitation/Replacement Program – Group 8, Chestnut Hill Bridge No. 951:** Senior Engineer responsible for the highway evaluation aspects of the Design Study Report for a 36-foot-long,

two-span continuous precast concrete superstructure supported by stone abutments and a concrete pier. Gloucester, RI.

- **Spring Street Bridge, MassDOT Bridge Repair and Replacement Program, Non-NHS/Round 3:** Senior Engineer for design of roadway realignment and utility improvement aspects of this bridge replacement project. The new bridge consists of a 70-foot, single-span structure with pile-supported integral abutments to carry Spring Street over the Mill River. Taunton, MA.
- **RIDOT High Hazard Interstate Contract C-1:** Staff Engineer for a study of ramps at 21 highway intersections on Interstate Routes I-95 and I-295. The studies were conducted to identify and eliminate hazardous conditions. Statewide – Rhode Island.
- **RIDOT 1R Improvements to Greenville Avenue:** Staff Engineer responsible for compiling design plans and the distribution of quantities and contract documents for this 1R Improvement project. Johnston, RI.
- **RIDOT 1R Highway Safety Improvements to Route 108:** Responsible for finalizing the design plans, and compiling the Distribution of Quantities and Cost Estimate for the 4.2-mile roadway project. South Kingstown, RI.
- **Swansea Highway Department:** Intern responsible for detailed cost analysis for roadway and sidewalk rehabilitation for major subdivision. Prepared plans for road leveling and drainage improvements. Surveyed roads to be rehabilitated. Performed road sign inventory and field layout of speed zones. Swansea, MA.
- **Town of Warren Roadway Drainage Design:** Senior Engineer for design, permitting, and construction observation of a closed drainage system on Seymour Street and drainage improvements on Serpentine Road. Warren, RI.
- **Route 2 Water Main Extension:** Roadway engineer for extension of the high service area in the Kent County Water Authority system. The project was originally funded by a private developer and included the design of approximately 8,000 feet of 16-inch water main. The scope of work included delineation of project wetlands and a Physical Alteration Permit to be obtained from RIDOT. Warwick, RI
- **Mendon Street Road Design:** Senior Engineer for the design of approximately 700 feet of new roadway with utilities, including horizontal and vertical design. Providence, RI.
- **Foxwoods West Side Service Road Extension – Design:** As Senior Engineer, assisted in the conceptual design of an approximately one-mile long service road to connect Parking Lot 9 with Pequot Trail. Existing and proposed utilities, traffic flow patterns, wetland areas, and archaeologically sensitive areas were integral parts of the final conceptual design. The final location of the roadway was based on minimizing cut and fill quantities in an attempt to best accommodate utility, wetland and sensitive restraints. Ledyard, CT.

- **Mashantucket Pequot Tribal Nation Phase 7A Housing Development:** As Senior Engineer, assisted in the design of the roundabout. Mashantucket, CT.
- **Town of Amesbury Subdivision Reviews:** As a Senior Engineer, responsible for engineering review of various development properties. Provide advice to the Planning Board concerning alternative design opportunities. Prepare and submit written comments concerning findings. Attend Planning Board meetings upon request. Amesbury, MA.
- **Twin River Expansion Off-Site Roadway Improvements:** Senior Engineer responsible for various tasks associated with organizing work effort for numerous traffic counts, accident data collection, and coordination of staff and completion of report information for off-site traffic and roadway improvements, including a double-lane roundabout, required for expansion of this large gaming facility. Lincoln, RI.
- **Relocation of Cory's Lane Intersection:** Senior Engineer responsible for various tasks associated with the design and relocation of the intersection. Portsmouth, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Central Landfill – Reconstruction of the Main Scales Access Road:** Project Engineer for the design of 1,200 feet of roadway reconstruction and drainage improvements. The project included the installation of a composite asphalt/concrete product, Densiphalt, to withstand the heavy truck loads entering the site. Johnston, RI.

#### ***Site Development***

- **Twin River Parking Lots:** Design and permitting for three new parking lots at the Twin River facility to provide approximately 1,100 parking spaces for employees and patrons for special events. Design included underground storage and infiltration for the storm water runoff and soil removal program for removing unsuitable subsurface materials. Construction observation services, including materials testing, were also provided. Lincoln, RI.
- **USPS Branford Carrier Annex:** Senior Engineer responsible for drainage design component of site development for construction of a new carrier annex distribution center. Branford, CT.
- **University of Rhode Island - New CHI PHI Fraternity House:** Project Engineer for a new \$2.4 million, three-story, 14,400-SF fraternity house and 38 space parking lot on 1.5 acres. Services included geotechnical investigations, wetland delineation and permitting, site layout and design, drainage design, utility research and design, sanitary sewer evaluation, cost estimates, and construction-phase services. Kingston, RI.
- **University of Rhode Island Freshman Village:** Senior Engineer for site drainage and grading design for renovations and additions to six 4-story dormitories that comprise the Freshman Village. Kingston, RI.
- **Albion Road Site Development:** Senior Engineer for a seven-acre office complex development project. Services included site layout and grading for three office buildings totaling 54,000 square feet, drainage design, utility

design, traffic analyses, permitting, coordination with government agencies, and construction estimates. Lincoln, RI.

- **Town of Bristol Engineering Consultation:** Senior Engineer for engineering reviews of various developments proposed in the Town of Bristol during the last several years. Services have included site plan review and construction observations. Bristol, RI.
- **Gorham Property Feasibility Study:** Senior Engineer for a Phase I Development Analysis performed to identify, on a preliminary basis, how much surplus property exists at this industrial facility and what the build-out development capacity of the property is, in order to determine a market value of the property. Smithfield, RI.
- **Camp Meehan Site Suitability Analysis:** Senior Engineer for Development Analysis to identify, on a preliminary basis, how much surplus property exists at the camp, and what is the build-out or development capacity of this surplus property. Lincoln and North Providence, RI.

#### ***Recreational Trails***

- **RIDOT - Colt State Park Bike Path:** Project Engineer for final design of a multi-use path connection from Hope Street to the East Bay Bike Path, and then to the existing bike path within Colt State Park. Also included is the resurfacing and repair of the existing path within the Park. Bristol, RI.
- **Quonset Development Corporation - Shared Use Path:** Project Engineer for a 2.5 mile at-grade shared-use path within a former Navy Base being converted into an Business Park. The facility is located along abandoned roadways as well as along sections of grassed fields and will require the redesign of access to adjacent commercial properties. The design also includes providing access to a parking lot designed for path users. North Kingstown, RI.
- **Blackstone Valley Gateway Center – Bike Path Connector and Site Design:** Senior Engineer for the design of an approximate  $\frac{3}{4}$ -mile bike path to connect the Blackstone River Bikeway to a new Visitor's Center on I-295 Northbound. The project included horizontal and vertical alignment of the new bicycle path, wetland delineation and permitting, and drainage improvements. Lincoln, RI.
- **Pawcatuck River Walk:** Senior Engineer for final design of a 3,000-linear foot river walk route along the Pawcatuck River. As Staff Engineer, performed Feasibility Study to investigate the development of various alternatives for the river walk. The study phase included incorporating public input gathered through questionnaires and public meetings; existing conditions analysis including mapping, utilities, right-of-way, historic structures, wetlands, floodplains, accident data for at-grade street crossings, and other appropriate data and physical conditions that could impact route alignment; structural analysis of existing river walk structures; and selection of river walk boardwalk structures, riverbank stabilization methods, and proposed pedestrian bridge type. Westerly, RI.
- **Wickford-to-Quonset Bikeway:** Senior Engineer responsible for providing conceptual design for a municipal bikeway through the Town of North Kingstown. Included an investigation of the use of on-road and off-road



segments, as well as an abandoned trolley line corridor, for an extension of the existing bikeway facility from the North Kingstown Town Hall to the Quonset/Davisville Port and Commerce Park. North Kingstown, RI.

- **Ellis Pond Pedestrian Walkway:** Senior Engineer for design of approximately 2,300 linear feet of recreational trail adjacent to Ellis and Guild Ponds. The design includes vertical and horizontal alignments, necessary footbridges, strategically located overlooks, boardwalks, bench locations, and parking. Norwood, MA.
- **Salem Harbor Walk:** Staff Engineer involved in the development of preliminary design plans for an approximate 1,100-foot-long harbor walk and extension of the South River Walk. The project included condition surveys of the existing area and various traffic studies. Salem, MA.

***Solid Waste Engineering***

- **Rhode Island Resource Recovery Corporation (RIRRC) Central Landfill – Sedimentation Pond Survey:** Participated in the survey of the silt levels within the sedimentation ponds. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Central Landfill – On-Site Daily Engineering Support:** Engineer providing on-site engineering support for landfill operations. Tasks included GPS topographic survey of existing landfill surface, computation of volumes with Land Development Software, observation and gas monitoring of horizontal gas trench construction, and erosion control inspections. Johnston, RI.