Town of Belmont

Community Path Feasibility Study

Proposal April 22, 2016



KITTELSON & ASSOCIATES, INC.

Hatch Mott MacDonald





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April 22, 2016

Mr. Jeffery A. Wheeler, Senior Planner Office of Community Development Homer Municipal Building 19 Moore Street Belmont, MA 02478

RE: Belmont Community Path Feasibility Study

Dear Mr. Wheeler:

BSC Group, Inc. (BSC) is pleased to submit our proposal to provide professional planning and engineering services relating to the Belmont Community Path that will provide a vital link between the future Mass Central Rail Trail segment at the Waltham City line to the existing Fitchburg Cutoff Path at Brighton Street. Our interdisciplinary team of professional engineers, planners, landscape architects, and scientists, has successfully completed feasibility studies and designs of multi-use paths in the Commonwealth of Massachusetts, many of which are under construction or have been completed.

BSC is currently assisting the Town of Belmont with construction administration services related to the Trapelo Road/Concord Street Improvement Project through the Massachusetts Department of Transportation. We believe our established working relationship with Town staff and knowledge of the Town's infrastructure will be an asset to the success of this project. Although this project presents many challenges with regard to right-of-way and access, we believe it will be an incredible opportunity to enhance overall aesthetics, provide safe pedestrian/bicycle connections to regional transit, the downtown area and the community, revitalize cultural growth, and drive economic development within the area.

With respect to our team's qualifications for this project, we offer the Town of Belmont the following advantages for your consideration:

Experienced Project Management - To successfully meet the goals established by the Town of Belmont, we will commit to this project the appropriate level of qualified staff, including Mr. Bill Paille, PE, project manager with guidance from principal-in-charge Thomas Loughlin, PE. We believe the combination of Bill's rails-to-trail project experience with review and approval from MassDOT, and Tom's deep understanding of available funding programs will help position Belmont for the funding that will make this project a reality. BSC's leadership team is complete with Charlie Kalauskas, PE and Peter Briere, PE selected to provide area knowledge on an as-needed basis, earned from past BSC-led projects in Belmont.

Engineers

Environmental Scientists

Custom Software Developers

Landscape Architects

Planners

Surveyors



Team Firms Enhance Analysis - To assure each element of the feasibility is carefully analyzed with professional staff that have in-depth experience in that specific area, we are pleased to team with Mr. Andrew Paul, Sr. Engineering Associate and Mr. Conor Semler, AICP, Senior Planner from Kittelson & Associates, Inc. for transportation engineering and planning. As leaders in the transportation field through their contributions in the development of the Urban Bikeway Design Guide for the National Association of City Transportation Officials and guidelines for providing access to public transportation stations for the Transportation Research Board, Andy and Conor bring to our team substantial planning and design experience as well as public education and outreach related to multi-use trail design.

Also joining BSC's team is Hatch Mott MacDonald (HMM) to provide engineering analysis in rail and tunnels as well as to complement BSC's own cost estimating skills. Working on behalf of MassDOT, HMM recently conducted an evaluation of all feasible tunneling alternatives for a 7-foot diameter by 330-foot long corrugated steel pipe culvert, buried beneath approximately 25 feet of fill below Interstate 90. The firm is a leader in developing creative tunneling concepts and adds value to the BSC team.

BSC appreciates the opportunity to propose our services to you. We believe we've proposed both a creative and technically-competent team to help move this important project forward on behalf of the Town of Belmont. We look forward to your favorable review of our proposal and an opportunity to meet with you on the Community Path Feasibility Study. Please contact project manager Bill Paille at 617-896-4312 (email: wpaille@bscgroup.com or me directly at 617-896-1432 (email: tloughlin@bscgroup.com) if you require additional information.

Very truly yours,

BSC Group, Inc.

Home Zaughe

Thomas Loughlin, PE Principal and Vice President

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Section 1: Meeting the Town of Belmont's Selection Criteria

BSC Group Project Team Advantages

- Experience planning and designing recreational pathways
- Interdisciplinary team to provide expertise in all required disciplines
- Skill in maintaining municipal project budgets
- Understanding of MassDOT and AASHTO design standards and the project approval process
- Ability to deliver a comprehensive feasibility study with added expertise from Kittelson Associates (KAI) for bicycle pathway planning, and Hatch Mott MacDonald (HMM) in rail, tunnels, and cost estimating.

Moving Forward to Feasibility Study

Moving forward with the proposed feasibility study is an exciting juncture in the Town of Belmont's journey to make an informed decision on the "right" community path configuration and design features. BSC Group is eager to be part of this phase offering the Community Path Advisory Implementation Committee a well qualified, experienced, multidisciplinary team to work with the community, conduct engineering assessments, develop design solutions with cost estimates for two or more path options, and assist with funding opportunities.

Demonstrating our qualifications is BSC's response to the Town of Belmont's various qualifications criteria from the minimum components to the evaluative criteria presented on Pages 10 through 13 of your Request for Proposal (RFP).

Minimum Criteria Responses (RFP Item 4.a)

BSC Group is pleased to respond to the Town of Belmont's Minimum Criteria in the following narrative. In some instances, we have made reference to a more complete response in a specific section of the enclosed proposal.

 Professional qualifications and experience of the proposed project team members, especially the project manager, in the evaluation, design, and construction of public works facilities in general and in particular construction of community paths.

The BSC Team is comprised of professional staff from BSC Group and selected subconsultants Kittleson Associates (KAI) and Hatch Mott MacDonald (HMM). The BSC Team presents experienced staff in all required areas, many of whom have a deep knowledge of the segment areas based on past and present work in Belmont. KAI adds value to our team with their credentials in route analysis and safe segment recommendations, as well as bicycle path facility design types. HMM is a leading North American consulting engineering firm with a century of worldwide experience. HMM's comprehensive engineering services in all areas of transportation including rail and tunnels will contribute to the development of a realistic feasibility study that can be funded and built. The combined firms and individuals composing our team are committed to identifying the route segments with the highest level of protection while also considering each segment's connectivity to transportation, community and education, cost effectiveness, and overall feasibility.

Mr. William Paille, PE, will serve as BSC's project manager and principal contact with the Town of Belmont. He has successfully completed several multiuse trail projects for Massachusetts municipalities as well as the Massachusetts Department of Transportation. His experience includes serving as project manager for the Cochituate Rail Trail, Framingham; Southwick Rail Trail, Southwick; Somerville Community Path, Somerville; North Suburban Regional Bicycle Transportation Plan (Phase I & II); and the Driftway Trail, Phase I in Scituate.



Adequacy of proposed project team in terms of training, experience and availability of proposed project team members for this project.

Our team is experienced and ready to undertake this project. The following chart lists all proposed staff by name, role, discipline registration if applicable, and their years of related experience. In Section 3, Team Organization, Professional Staff, and Capacity, we provide current project commitments and percentage of time available for proposed team members is provided.

Staff/Role	Professional Registration	Years' Experience	Staff/Role	Professional Registration	Years' Experience
Project Leadership			Pathway Planning		
William Paille, PE Project Manager	Professional Engineer MA #39312	28	Andrew Paul, EIT Planning (KAI)		28
Thomas Loughlin, PE Principal-In-Charge and Funding	Professional Engineer MA #46491	34	Conor Semler, AICP Planning (KAI)		34
Charles Kalauskas, PE Project Advisor / Planning	Professional Engineer MA #30578	47	Jef Fasser, RLA Landscape Architect	Registered Landscape Architect MA #814	37
Peter Briere, PE Project Advisor /	Professional Engineer MA #29892	45	Casey-Lee Bastien, RLA Landscape Architect	Registered Landscape Architect MA #1554	15
Constructibility Transportation Engineerin	g Analysis		Alexandra Echandi Trails and Funding		14
Peter Reed, PE Sr Transportation Engineer	Professional Engineer MA #33130	38	Sean Ewald, PLS ROW/Easements/Survey	Professional Land Surveyor MA #47143	16
Kellan Lewis, EIT Transportation Engineer		5	Public Outreach		
Samuel Offei-Addo, PE, PTOE Sr Traffic Engineer	Professional Engineer MA #41558	30	Public Outreach Public Support		20
Joanna Kavalaris, PE, PTOE Traffic Engineer	Professional Engineer MA #49031	11	William McChesney HMM Cost Estimator (HMM)		40
Micah Morrison, PE, SE Structural Engineer	Professional Engineer MA #46726	16	BSC's team for both senior an	this feasibility study ir d mid-level profession	ncludes als. We
Matthew Schwartz, EIT Structural Engineer		1	anticipate the carried out by professionals	majority of the work w very capable mid-level with the advice of more	ill be e senior
Arzu Kurkoglu, PE Rail Engineer (HMM)	Professional Engineer C 67875	14	staff as neede Community Pa	d to support Belmont's ith Feasibility Study.	
Stephen Taylor, PE Tunnel Engineer (HMM)	Professional Engineer MA #40029	40			



BSC is prepared to provide professional advice and work with Belmont on the necessary documentation for potential funding applications. Completeness and responsiveness to the RFP. Specifically, applicant's understanding of the project requirements, technical competency to address all project elements, and originality and thoughtfulness of proposed approach to achieving completion of the project described in the RFP.

BSC's planning and conceptual design team has worked successfully with municipalities including citizen groups, planning agencies, and private sector clients leading feasibility studies, developing technical approaches, and providing the breadth of services that prepare project proponents for implementation. For your consideration, BSC's General Approach, which includes route renderings, is presented in Section 2. Our approach demonstrates project understanding, technical competency, and knowledge of each project area.

Applicant's demonstrated ability to prepare, support and implement a project of this type and scale that requires design, engineering, construction cost estimation, problem solving, and writing ability, among other skills.

We are offering the Town of Belmont the unique blend of a strong local engineering team with considerable knowledge of the project area combined with expertise from two national firms: KAI to provide assessment and planning, and HMM to provide engineering analysis in rail and tunnels as well as a complement to BSC's own cost estimating skills. We have carefully selected the composition of our team assuring our ability to develop unique solutions for the Town of Belmont, and ultimately achieving funding and construction of one or more community path segments.

As an example of our preparedness, we point back to the early 2000's when BSC worked with the Belmont Community Development Department to plan and design the reconstruction of Pleasant Street. As part of this project, a large diameter pipe was jacked under the MBTA railroad tracks to carry a drainage pipe as part of a plan to eliminate flooding on Pleasant Street. We believe this is important when considering a potential crossing under the MBTA tracks at Alexander Avenue.

National planning firm KAI brings their experience from serving on the research team that developed the Federal Highway Administration's Separated Bike Lane Planning and Design Guide. Working with the Office of Human Environment's Livability Team, KAI researched best practices in planning and design of separated bike lanes, also known as cycle tracks. KAI's research included a detailed safety and mode share analysis, while highlighting separated bike lane planning and design information.



Section 1: Meeting the Town of Belmont's Selection Criteria



Visual mockups, similar to what we prepared for Belmont Center, engage interested groups in understanding proposed changes to existing infrastructure in their community.

Working on behalf of MassDOT, HMM recently conducted an evaluation of all feasible tunneling alternatives for a 7-foot diameter by 330-foot long corrugated steel pipe culvert, buried beneath approximately 25 feet of fill below Interstate 90. The structure is to be replaced utilizing tunneling methodology, consideration to context sensitive solutions as well as the goals and objectives of MassDOT. Final contract documents, calculations, special provisions, and estimate of quantities are currently underway.

Equally important to applying earned expertise in key disciplinary areas is our team's ability to look forward applying creative approaches for technical components as well as to public outreach and funding. In fact, with the use of today's technologies, we believe there is opportunity to lead lively public input sessions and consider ways to build project funds for matching purposes from formal sponsorships to crowdfunding.

List of feasibility studies and applicable references that demonstrate studies that were completed on time and within budget, required modifications to the scope of services and were delayed and over budget, and those that lead to funding and construction of the path.

BSC, KAI and HMM each offer recent experience in conducting feasibility studies for transportation projects, many of which have led to funding and construction. Highlights of this list are presented on the following page.



Mock ups of transportation improvements are shown here at the entrance to a redeveloped business park in the southcoast area of Massachusetts.



Service	es/lss	ues				
Projects Projects Conceptual Design and Construction Conceptual Design and Construction Control of the Participation Control of the Participation Client References						
Assabet River Rail Trail Bridge Alternatives Study Town of Acton, MA BSC	-	-				Roland Bartl, Town Planner 978-929-6631 planning@acton-ma.gov
Town-Wide Comprehensive Trails Plan Town of Hingham, M BSC	•	-				Mary Savage-Dunham 781-741-1419 dunhamm@hingham-ma.gov
Neponset Greenway Master Plan Department of Conservation and Recreation BSC	•	•	•	•	•	Stella Lensing MA DCR, Recreation
Neponset GreenwayDesign of Segments1, 2, & 3Department of Conservationand RecreationBSC	•	•	•		•	& Resource Protection 617-626-1387 stella.lensing@state.ma.us
Bike Path Feasibility Study (performed by PM, Bill Paille) Town of Wareham	•		•	•		Michael Langford Chairman Town of Wareham 508-291-3100
Upper Charles Trail, Phase I and II (performed by PM, Bill Paille) Town of Milford	•	•			•	Reno DeLuzio, Chairman Milford Upper Charles Trail Committee renodeluzio@comcast.net
City of Boston Green Links Plan Boston (KAI)	•	•				Charlotte Fleetwood, Transportation Planner Boston Transportation Dept. 617.635.2462 charlotte.fleetwood@boston.gov
Feasibility Analysis and Design/Construction of I-90 Culvert Replacement Utilizing Tunneling(HMM) MassDOT, Blandford, MA	•				•	James Dalton, PE MassDOT - Accel. Bridge 10 Park Plaza, 6th Floor. Boston, MA 02116 T: 857-368-9313 james.m.dalton@state.ma.us

The BSC Team has completed more than five feasibility studies for local government clients.

Section 4: Team Experience presents more than ten relevant projects highlighting our service in both studies and design of pathway projects.



Bike friendly communities today are focusing beyond exercise and recreation, and are creating urban mass transportation networks.

Financial stability of the applicant firm.

A proprietary copy of BSC's abbreviated 2015 annual report is provided in Section 5, Submission Requirements.

Minimum Criteria Continued (RFP #4.a)

1. The consultant's proposed project manager (PM) should have an an engineering degree and be a licensed professional engineer in Massachusetts.

Proposed project manager, William Paille, is a Massachusetts Registered Engineer since 1996. His professional engineering license number is 39312. Bill is a 1988 graduate of the University of Massachusetts, Amherst where he earned his BS in civil engineering.

2. Team members should include highly qualified individuals with backgrounds in civil, environmental, structural engineering, rail engineering, bridge and tunnel design, right-of-way/easement requirements, landscape architecture, construction management, budgeting, quality control, and scheduling.

Proposed staff members have strong credentials in each of the disciplines requested. Our proposed team is presented in Section 3, Team Organization, Professional Staff, and Capacity. The backgrounds and professional experience for each proposed team member in their roles relevant to the Town of Belmont's community path project are highlighted within the noted proposal section and further detailed in each individual's resume, found at the end of Section 3.

3. The proposal must meet the submission requirements outlined in Section 3 (Criteria # 3, Relevant Experience as follows):

Designing and building community paths in communities similar to Belmont.

BSC Group's project manager, Bill Paille has provided design services for community paths facing many of the same issues to be studied in Belmont from safe path crossings that involve bus ways and rail, to privacy screening for abutters. Communities similar to Belmont where we have provided design of pathways and additional services include the towns of Acton, Hingham, Milton, and Scituate, to name a few.

In addition, BSC designed a path for the Town of Belmont as an additional service to the original Pleasant Street Reconstruction project. The initial design did not have bicycle accommodation due to right-of-way and topographic restrictions, and the inclusion of it during the preliminary design phase was quite controversial as it resulted in the removal of some trees within the Historic District. At the time, the standard was a 1 meter bicycle accommodation, which is narrow by today's standard.



Section 1: Meeting the Town of Belmont's Selection Criteria



As part of BSC's plan for the Assabet River Rail Trail, we prepared graphic posters to demonstrate linkages to key locations along the trail. Posters were placed along the trail, as well as at businesses near trail locations.

Additionally, as part of BSC's early work on Concord Avenue, we provided bicycle lane layout including pavement markings and signing for vehicle, bicycle, and parking lanes on roadway segments and intersections.

• Working on Rail-with-Trail Projects.

BSC's project manager, Bill Paille was especially selected to lead this opportunity as he has led the design of several successful rail trail projects. Prior to joining BSC, he served as either project manager or transportation designer for the following MassDOT coordinated projects:

- Southwick Rail Trail (Phase I), Southwick, MA
- Cochituate Rail Trail, Framingham, MA
- Upper Charles Trail Phase I & II, Milford, MA
- Franklin County Bikeway (Phase I), Deerfield/Montague, MA
- Franklin County Bikeway (Phase III), Greenfield, MA

Bill recently joined BSC Group from the City of Newton where he served as the Director of Transportation, and was responsible for overseeing the design, operation, and maintenance of transportation related capital improvement projects within Newton's 13 separate villages. As the Director of Transportation, Bill met regularly with the Newton Bicycle Advisory Committee working closely with the group to formulate plans for proposed bicycle facilities.

 Designing and estimating the cost of tunnels and bridges for community paths.

As a Massachusetts firm supporting a broad number of transportation improvement projects, BSC provides cost estimating services for numerous road and bridge designs as well as for significant landscape design efforts involving the transportation system such as walking trails and pathways. Ongoing/recent relevant projects include:

- MassDOT, North Royalston Road over West Branch Millers River, Winchendon, MA
- MassDevelopment, Jackson Road over Nashua River, Devens
- MassDOT, I-290 Bridges, Structural Repairs and Painting, Worcester

Augmenting our team in both tunnels and cost estimating are the skills of HMM transportation engineers selected to support this feasibility effort. HMM points with pride to delivering some of the most challenging tunnel projects from some of the smallest to the largest, and on the premise that all tunnels have their own individual challenges. HMM will meet the challenges of assessing the Town of Belmont's tunnel option through



BSC provided design of accessibility improvements at the MBTA's Mansfield and Auburndale Commuter Rail Stations. on the ground gathered information coupled with design, visualization, and construction technologies that are right for the job. Accompanying HMM's tunnel expertise are skilled cost estimators who will carefully assess not only the feasibility of a tunnel itself but the affiliated costs and ease or complexity of achieving tunnel design and construction.

• Working with and designing paths using MassDOT compliant design standards.

As a prequalified MassDOT firm providing many services for the Complete Streets program, BSC has prepared paths using MassDOT compliant design standards including our ongoing work on the Town of Belmont's Trapelo Road construction. In addition and as noted above, the five rail to trail projects managed by Bill Paille received MassDOT review and approval, and were then constructed by MassDOT.

• MassDOT prequalification.

Each of the team firms, BSC Group, KAI, and HMM, are prequalified firms with MassDOT in the areas of their proposed service for this project. Categories for each firm are shown in the table at the end of this section.

 Working with the MBTA on path-related projects, and resultant knowledge of MBTA regulations, operations and procedures.

BSC Group works with the MBTA in an on-call capacity under two consecutive contracts for civil engineering and land surveying. These contracts have resulted in numerous task assignments for a variety of services, including demolition of two dockside cranes at the Fore River Shipyard Ferry Terminal, design of accessibility improvements at the Mansfield and Auburndale Commuter Rail Stations, and design of emergency repairs at the MBTA's bus terminal. As noted, we are currently conducting inspection services at 15 pedestrian bridges along active rail lines. And, we were directly selected by the MBTA's accessibility office to develop and design custom software for the MBTA's Plan for Accessible Transit Infrastructure (PATI). This custom tablet application will be used to inventory and rank the condition of all of the MBTA's rail, transit and bus stops in terms of their accessibility.

In addition to BSC's experience with the MBTA, HMM is working extensively with the MBTA on such projects as the

- Red Line/Orange Line (RL/OL) Infrastructure Improvements Program, Boston, MA
- Green Line Extension (GLX) Project, Boston, MA
- South Station Expansion (SSX) Project, Boston, MA (via MassDOT)



BSC Group is an advantageous choice for this project due to our highly capable team and our extensive valuable experience.

Working with the Massachusetts Department of Conservation and Recreation.

BSC Group has three on-call contracts with the MA Department of Conservation and Recreation to provide services in civil engineering (Contract #395), landscape architecture and planning services (MSA #618) and an environmental consulting (#509). Through these contracts as well as separate contracts, BSC has served as the lead transportation / civil engineer and permitting strategist and ecological scientist on the Neponset River Restoration Master Plan from 2007 to the ongoing construction of Segment 3. BSC Group and team partner KAI were recently selected by DCR to study conceptual intersection alternatives for the Fellsway East and Highland Avenue intersection in Malden We have also led sensitive ecological science and permitting efforts at Walden Pond State Reservation (Resource Management Plan and Visitor Services Plan), Pongapaug Golf Course Restoration in Canton, Houghton's Pond Visitor Center in Milton.

The BSC Group Team Stands Ready to Move Forward Working with Belmont's Community Path Implementation Advisory Committee

Our team is prepared to work closely with all parties involved in the proposed feasibility study. For more than 20 years we have worked with the Town of Belmont, providing professional services to many projects that tie in important components of this feasibility study.

We would consider it our privilege to continue to assist the Town of Belmont through this effort with the assessment, design, funding, and ultimate construction of a community path, thereby delivering to the community a recreational space for walkers, runners, cyclists and disabled individuals; and to provide the walkable and bikeable routes connecting schools, parks and other recreational and cultural facilities, while linking Belmont to the surrounding communities.



	BSC	нмм	KAI
Major Environmental Documentation			
Basic Roadway Design			
Intermediate Roadway Design			
Basic Bridge Design/Rating			
Intermediate Bridge Design/Rating			
NBIS Bridge Inspection			
Traffic Operations Studies and Design			
Construction Oversight			
Construction Contract Assistance			
Hydraulics and Hydrology	•		
Landscape Architecture			
Transportation Planning			
Hazardous Waste, Site Investigation			
Wetlands, Delineation and Assessment			
Wetlands, Mitigation			
Water Quality - Assessment			
Water Quality - Mitigation			
Engineering Field Survey			
Total Station AutoCAD Base Plan Services			
Layout Document Preparation			
Complex Roadway Design			
Complex Bridge Design/Rating			
Geotechnical Engineering Including Soils and Foundation Studies		•	
Transit and Rail Systems Design			
Transportation Planning			

Team Firms are Qualified with MassDOT



Through the Town of Belmont's three-phase process, the BSC Team will determine which routes and path designs to recommend to the Board of Selectmen

Understanding Belmont's Investment

The Town of Belmont has invested a significant amount of time and resources in the planning of the Community Path west of Brighton Street to the Waltham City line in recent years. Our team is prepared to work closely with the Town to provide a full range of planning and engineering services in order to complete the feasibility study of the Belmont Community Path as identified in the Request for Proposals (RFP). Specifically, a comprehensive working document summarizing recommended routes along with conceptual designs and visions, discussion of the pros and cons, and associated engineering/construction costs. In addition, our team will assist the Town in understanding the available funding sources, application processes and schedule with the primary goal of securing monies for the eventual construction of the trail that will provide a connection to the future Mass Central Rail Trail at or near the Waltham City line to the existing Fitchburg Cut-off Path that currently terminates at Brighton Street that opened in September 2012.

Due to the likelihood the funding and/or construction of the Belmont Community Path will require approval at either the State or Federal level, we will base our designs on the relevant sections of the 2006 Project Development and Design Guide by the Massachusetts Department of Transportation (MassDOT), the 2015 Separated Bike Lane Planning and Design Guide by MassDOT including the latest standards and details; the 2010 Urban Bikeway Design Guide by the National Association of City Transportation Officials (NACTO); and the 2004 Guide for the Planning, Design, and Operation of Pedestrian Facilities as well as the 2012 Guide for the Development of Bicycle Facilities by the American Association of State Highway Transportation Officials (AASHTO). The following is a summary of our approach to this project:

APPROACH AND METHODOLOGY

Field Investigation and Data Collection

Our team will utilize all existing information and data available from the Town of Belmont, City of Waltham, Metropolitan Area Planning Council (MAPC), Massachusetts Bay Transportation Authority (MBTA), Massachusetts Department of Transportation (MassDOT), including aerial mapping, existing studies, reports, GIS data, cost estimates, right-of-way, soil information, as-built plans, observations, and limited field data obtained during site visits in order to fully assess existing conditions and develop a good understanding of the project corridor.

We will obtain any available traffic data, as-builts or reports from the Town of Belmont, City of Waltham or MassDOT in order to better understand traffic conditions along Trapelo Road, Pleasant Street (Rte 60), Concord Avenue, Channing Road, Underwood Street, Hittinger Street, Brighton Street, etc. New vehicle counts may be required at specific locations where we believe it necessary to understand existing vehicle, bicycle and pedestrian traffic



conditions where data is outdated or non-existent. We will obtain all available accident data information along these same streets or at specific at-grade and/or mid-block crossings within the project corridor dating back at least three years.

We will evaluate route alternatives that require path users to navigate across either signalized or non-signalized intersections and mid-block crosswalks with respect to traffic volumes, queue/delay, number of lanes, lane width, turning movements, sight distance, ADA/AAB, in order to evaluate and recommend any required traffic improvements that may include new fully or semi-actuated traffic signals, Pedestrian Hybrid Beacons (i.e. RRFB or HAWK), lane modifications, crosswalk relocation, signage or geometric upgrades, etc. We will identify all design constraints and impacts as a result of a proposed alternative, including right-of-way, utilities, environmental, and trees. We will then meet with the Town and develop alternative designs, including preliminary construction costs.

Our design team will evaluate and recommend geometric improvements, warrants for traffic signals, future traffic volumes, and determination of capacity and Level of Service (LOS) for both existing and projected analyses with respect to conformance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). As part of any traffic evaluation our team performs, we will focus on the following key technical issues to completely understand the impact of traffic on potential routes:

- Analyze accident records for the three most recent years within the project corridor
- Develop the most efficient geometric configuration and signal layout
- Identify appropriate, aesthetically pleasing, traffic calming measures
- Provide safe/accessible pedestrian crossings that meet current ADA regulations

Our team includes engineers with experience specifically in the design and construction of bicycle and pedestrian tunnel structures beneath active rail lines. If an access tunnel is determined to be the best option, our team is prepared to assess, evaluate, develop concepts and associated construction costs for various types of tunneling methods including mined or bored tunneling, open cut and jacking.



Importantly, we will develop a complete understanding of land ownership along the entire project corridor

Right-of-Way

Portions of the routes being considered will likely be located within existing public right-of-way, including the Lone Tree Hill conservation land (i.e. Town of Belmont), the Belmont Citizens Forum (BCF) Land, and an easement held by the Division of Conservation & Recreation (DCR). There are several segments or portions of segments that may be within or adjacent to land owned by the MBTA or private owners. It is imperative we develop a complete understanding of land ownership and exact location of property layout along the entire project corridor and thus will perform the necessary research and collect relevant right-of-way information from the City of Waltham, Town of Belmont, MBTA, MassDOT and Registry of Deeds in order to verify the latest property lines and ownership information.

Civil Engineering, Evaluation & Cost Estimating

Our team will review each route previously developed and explore other possible alternatives as a result of meetings with the Town and community engagement. All conceptual designs will focus on the civil engineering and landscape architectural elements of the project, including the multi-use path, crossings (at-grade, tunnel, overhead), overlook/vista opportunities, connections to/over MBTA stations (i.e. Belmont Center & Waverley), connections to public buildings and businesses, ADA/AAB compliance, drainage upgrades, path landscaping/enhancements, linear/pocket park possibilities, screening, lighting, interpretive signing, wayfinding and information kiosks. Each alternative will be evaluated with respect to engineering feasibility (pros vs cons) along with a summary of estimated construction costs for comparison and use in future funding applications. Designs will remain conceptual but accepted only after meetings with the Town and project stakeholders by consensus on the engineering and design issues. In addition, a summary of potential funding sources and application schedule will be included in order to assist the Town with completing the design of the project, bidding the project and construction as soon as possible.

Public Participation and Meetings

Due to the fact that the Belmont Community Path is an important link to the Mass Central Rail Trail and has received a tremendous amount of attention from the community, local and regional governments with involvement from several key stakeholders thus far, public participation and community engagement is going to be a significant factor in the success of this project. Beginning with a kickoff meeting with Town officials, our team will initiate a public participation program that will involve coordination with the Community Development Department (Planning Division), Board of Selectmen, CPIAC, Conservation Commission, Department of Public Works, Disability Access Commission, Fire & Police Department. Once the initial data collection and site visits have been substantially completed and conceptual development has been initiated, public workshops and charrettes will play an important



Engagements of Stakeholders is a Significant Project Factor

MAPC

- Will Brownsberger
- Belmont Board of Selectmen
- Belmont Citizens Forum
- Recreation Committee
- Traffic Advisory Committee
- Historic District Commission
- Planning Board
- Local Bicycle Advocacy Group
- Community Path
- Implementation Advisory Committee
- Channing Road Residents
- MBTA
- Commuter Rail
- MassDOT
- DCR
- McLean Hospital
- City of Waltham
- Western Greenway



role in communicating with and engaging the community. These forums provide a healthy environment for folks to voice their support, opposition, feedback, ideas and concerns from residents, business owners, bicycle advocates and public officials at every level.

In general, the public participation program will be accomplished through a series of public workshops, site visits, charrettes, and meetings with Town representatives and other project stakeholders to develop working sketches and ideas that can be shared with the public. In addition to regular progress meetings, our team will work with Town and local officials to initiate an interactive public participation process that may include facilitating public workshops at key locations along a particular route, periodic walkabouts on a weekday/weekend when residents are available, scheduled CPIAC meetings, informational booths at local events (Annual pride day, farmer's markets, craft fairs etc), information flyers (paper or electronic), word of mouth, and providing graphics/concepts for the general public on the Town website. We have often used the email network from local or regional bicycle advocacy groups to get the word out as well and have been involved with on-line strategy sessions where residents share ideas using interactive maps and data bases.

Project Schedule

BSC maintains a staff of over 120 civil, transportation, structural, landscape architectural and environmental professionals whom have worked together on bicycle planning and design projects. Our Boston office includes a team of individuals who are registered professional engineers, landscape architects, professional land surveyors, LEED-accredited professionals (Leadership in Energy and Environmental Design), and environmental scientists who have successfully teamed together on projects similar to the Belmont Community Path in the Commonwealth of Massachusetts as well as throughout New England.

We have assembled our team to include depth of technical competence, expertise and experience with multi-use paths with high visibility similar to the Belmont Community Path project. Based on our track record on other public and private sector projects, our team members have proven their ability to meet the quality and budget controls the Community Path project will require. Upon authorization to proceed, our team will be available to begin immediately. The Town has indicated their desire to have this project completed by December 31, 2016 and we believe this is a reasonable time frame. Therefore we have carefully considered the current and future workload of each team member to ensure this project is completed in a timely manner while meeting expectations established during the kickoff meeting.

We are confident our depth of staff will allow us to assign highly qualified personnel to meet the Town's goals and schedules. We will make no changes in personnel without the written consent of the Town. Our team is prepared to begin upon execution of a contract or a Notice to Proceed. The following is a summary of the projected timeline in order to meet the project goals:



Estimated Schedule For Completion

2016	Ju	c			ul	٩ug		Sep	•	Ŭ	Oct	No No	2			Ded			Jan
Task	27	-	15 20	27				7	7	1 28		4	11	18 2	1 30	•	 9	31	
Notice to Proceed	•																		
Field Investigation and Data Collection		u O	0 9	ing			_												
Coordination with abutters, CPIAC		u 0	0 U	i n g															
Kick Off Meeting with Town Officials & Key Project Stakeholders																			
Route Evaluation & Initial Conceptual Designs			_																
1st Neighborhood Meeting/Workshop																			
Progress Meeting with Town Officials				•															
Revisions to Conceptual Designs & Preliminary Cost Estimate								-•-											
2nd Neighborhood Meeting/Workshop																			
Progress Meeting with Town Officials										•									
Finalize Conceptual Designs & Cost Estimate	a											-••-							
Draft Final Feasibility Study Report														•					
Progress Meeting with Town Officials (If Necessary)												 		-			 		
3rd Neighborhood Meeting/Workshop																			
Final Revisions to Designs, Cost Estimate & Feasibility Report												 							
Final Feasibility Study Report																		-0-	

Construction Funding

Although the primary goal of this project is to evaluate and recommend a viable route (s) for the Belmont Community Path from the Waltham City Line to the Fitchburg Cut-off Path at Brighton Street to the Board of Selectmen for approval, construction funding is essential in order for the project to be successful.

Funding for transportation improvements including bicycle and pedestrian infrastructure can come from a variety of sources at the federal, state and local level. In Massachusetts, projects are typically funded using federal transportation funds along with a non-federal match by the entity or proponent of the project (i.e. MassDOT, Regional Planning Organization or Municipality). Currently, federal transportation funding is allocated thru the Moving Ahead for Progress in the 21st century or MAP-21. The following is a summary of the bicycle/pedestrian related funding programs that are available:

Highway Safety Improvement Program (HSIP)

The purpose of this program is to reduce the number and severity of crashes at hazardous locations based on a data driven state Strategic Highway Safety Plan (SHSP) that defines goals, ranks dangerous intersections and includes a list of eligible projects. Projects include public road, trails or paths that are included in the state's SHSP such as intersections improvements, shoulder rehabilitation, high risk rural road improvements, traffic calming, data collection, and improvements for bicyclists, pedestrians and individuals with disabilities.

Transportation Alternatives Program (TAP)

A competitive, merit-based grant program that can be used to fund a variety of transportation projects including construction, planning and design of on-road and off-road trail facilities for pedestrians, bicyclists and other non-motorized forms of transportation; construction, planning and design of infrastructure-related projects that provide safe routes for non-drivers (i.e. children, older adults and individuals with disabilities); conversion and use of abandoned railroad corridors to trails for pedestrians, bicyclists or other non-motorized users; construction of turnouts, overlooks and viewing areas; recreational trails; and Safe Routes to School Program.

Railway-Highways Crossing (Section 130) Program

Funded thru the Fixing America's Surface Transportation Act (FAST Act), this program provides for the elimination of hazards at railway-highway crossings. The funds are apportioned to the State by formula and FHWA matches 90%. Projects at all public crossings including roadways, bike trails and pedestrian paths are eligible.



Safe Routes to School

Established to enable and encourage children to walk or use a bicycle to go to school with the goal of improving safety, reducing traffic, reducing fuel consumption and air pollution in the vicinity of the school (i.e. Belmont High School).

Surface Transportation Program (STP)

This program provides funding for projects to preserve and improve conditions on any public road, bridge and tunnel, pedestrian and bicycle infrastructure, and transit capital projects.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

This program is intended to improve air quality and reduce traffic congestion by funding projects including traffic flow improvements, public transit services and facilities, rideshare activities and outreach to commuters and employers as well as bicycle and pedestrian facilities.

MassWorks Infrastructure Program

A combination of six former grant programs including Public Works Economic Development (PWED), Community Development Action Grant (CDAG) and Transit Oriented Development (TOD). Each of these have the opportunity to fund improvements at specific locations that meet the funding criteria. BSC Group has extensive experience with this program as we have assisted four communities apply for and receive a total of seven grants through the program.

Transportation Enhancement Program

This federal funded program includes providing facilities and/or safety for pedestrians and bicycles, landscaping and other scenic beautification, preservation of abandoned railway corridors (including conversion and use of the corridors for pedestrian or bicycle trails). The Federal Highway Administration (FHWA) typically matches 80% while MassDOT matches 20% of the total cost of the project.

Chapter 90

Funded through the State Transportation Bond Bill and although typically used for roadway improvements, it could be used to implement temporary or minor improvements to consider longer term improvements that need to be piloted and or experienced by potential users of the facility.



TASK 1 – PRIMARY STAFF HOURS

Name	Hours
William Paille, PE	16
Kellan Lewis, EIT	16
Samuel Offei-Addo, PE, PT	OE 4
Joanna Kavalaris, PE, PTO	E 16
Micah Morrison, PE, SE	8
Matthew Schwartz, EIT	8
Arzu Kurkoglu, PE	8
Andrew Paul, EIT	8
Conor Semler, AICP	8
Jef Fasser, RLA	4
Sean Ewald, PLS	4
TOTAL	100

SCOPE OF WORK

TASK 1.0 Field Investigation and Data Collection

As part of Phase 1 of the RFP, the work will consist of performing field investigations and data collection from the Town of Belmont and the City of Waltham as well as regional and state agencies in order to develop a good understanding of the existing site conditions with respect to public and private right-of-way, utilities, traffic, geometry, sight distance, infrastructure, etc. During our site visits we anticipate meetings with residents and business owners and welcome the opportunity to hear from them and document their opinions, concerns and feedback regarding this project. This inventory will provide a base to evaluate routes that have already been developed as well as explore other possible routes and opportunities. All available plan and record information pertaining to utilities, property lines (public and private), owners (now or formerly), parcel numbers and corresponding Registry of Deeds book and page, easements and other relevant data will be collected and documented where appropriate in the final feasibility study report.

Although we do not believe it will be necessary to perform any topographical survey in order to meet the goals of this study, it may be beneficial to the project if we have precise elevations of a specific location such as a proposed tunnel(s) or overhead structure(s) in order to determine the feasibility of a particular solution. More specifically, areas where there is a significant grade change in order to make a connection, areas along the existing MBTA property to locate or identify existing boundary/property markers, or site conditions that may have changed or received improvements that are not shown on available aerial mapping or plans.

The initial phase of work will also include an assessment and identification of any existing wetlands, riverfront zones, buffer zones and areas that are considered jurisdictional by state wetlands regulations, as well as local wetland by-laws overseen by the Town of Belmont within the project corridor or at specific locations where a design concept may impact the resource. This information will be compiled, confirmed, and located using either sub-meter GPS equipment, standard survey methods or observation by a certified wetland scientist for use in concept development.



TASK 2 – PRIMARY STAFF HOURS

Name	Hours
William Paille, PE	60
Thomas Loughlin, PE	24
Charles Kalauskas, PE	24
Peter Reed, PE	48
Kellan Lewis, EIT	60
Samuel Offei-Addo, PE, PT	OE 8
Joanna Kavalaris, PE, PTO	E 24
Micah Morrison, PE, SE	8
Matthew Schwartz, EIT	24
Arzu Kurkoglu, PE	40
Stephen Taylor, PE	24
Andrew Paul, EIT	32
Conor Semler, AICP	48
Jef Fasser, RLA	24
Casey-Lee Bastien, RLA	40
Alexandra Echandi	48
Sean Ewald, PLS	24
William McChesney	24
TOTAL	584

TASK 2.0 Engineering Evaluation

Initial Review

As part of Phase 2 of the RFP, our team will review all previous studies prepared for the Town related to the Community Path as identified in Appendix A of the RFP. In addition to previously developed routes, any new segments developed as part of this study will be reviewed based on the following criteria:

- Available Land (public vs private)
- Geometry/Traffic (Safety factors)
- Accessibility
- Connectivity
- Compatibility (Local/Regional/State Goals)
- Construction Cost
- Profile Grade
- Aesthetics/Visual
- Environmental/Historic Impact

Each of these criteria will be assigned a point value out of a possible 100-point total as a means of evaluating the merits of one route or group of routes over another. In addition, based on this initial assessment, an order-of-magnitude cost of construction will be developed for each segment for comparison purposes.

Available Land: Although use of public property to support a bike trail or path is preferred, installing a path on private property is feasible, depending upon the type and use of that property.

Geometry: Safety is one of the primary concerns when considering any bicycle route and it is imperative to eliminate or minimize potential conflicts between bicyclists and motorized vehicles. When considering on-road routes several factors are considered including traffic volume, vehicle speed, vehicle type (i.e. trucks, buses, cars), pavement condition, lane width, roadway functional classification (i.e. arterial, collector, local) and roadway section (i.e. shoulder, curb, parking, driveways, etc.).

Access/Connectivity: In order to provide a bicycle facility that serves the community, access to the network is essential. Users should be able to enter the facility at or in proximity to residential areas and designated park-and-ride lots and be able to travel to/from destinations such as schools, libraries, town/village centers, commercial areas, recreational facilities and places of work. It is important the location and design of a bike path reflect the goals



of existing and future plans for the development and preservation of recreation, historic and cultural areas along the proposed route(s). The bike path should enhance and compliment the goals of existing or proposed parks or open space plans. It is very important the bike path have the support of local government, project abutters and the business community.

Construction Cost: The cost associated with the construction of a specific route is an important consideration. However, cost should not supersede safety or project objectives. In general, the cost of constructing an off-road route is typically higher than an on-road route. This is primarily due to the cost of new construction that may include new bridges/tunnels/culverts, upgrading existing bridges/tunnels or drainage, screening, walls or protective railing. The costs associated with on-road routes are usually limited to pavement markings, signage, minor curb modifications, ADA compliance or new pedestrian activated signal equipment.

Profile Grade: The physical limitations of the users determine acceptable grades along a bike path so it is important to provide a balance between comfort and ability, and the physical terrain of the proposed bike path. As a result, it is necessary to establish a maximum grade for a bike path that will provide a healthy, safe and economical facility that meets project goals and objectives.

Aesthetics/Visual: Bike paths typically provide opportunities to enhance environmental, scenic and historical areas. This can be accomplished by constructing spurs or secondary paths to selected areas, constructing picnic areas, vistas, overlooks and the use of guide signage directing users to these areas. For on-road routes, this can be accomplished thru the use of wayfinding signs.

Environmental/Historic Impact: In general, a bike path is designed to improve and enhance the environmental and historical characteristics of a corridor by providing safe, non-motorized access to these areas.

Although scoring a specific route higher/lower than another will not necessary secure or eliminate it from consideration, we believe this approach will provide a means of comparison and identifying the effort required with respect to engineering, right-of-way, permitting, cost and available funding in order to construct this project.

The results of the evaluation will be summarized in a memo and provided to the Town and CPIAC for review, comment and discussion. Once the preferred routes have been selected and level of analysis determined, the project will move into the evaluation phase.



Route Evaluation

We will focus on the routes selected during the initial review phase with respect to feasibility of construction, features, accessibility, engineering challenges, aesthetics, right-of-way, environmental impact, safety, proximity to residential homes and businesses. In addition, we will begin to develop conceptual designs/sketches/renderings of specific locations along routes identifying key features, structures, enhancements and connections for use during public workshops and as part of future funding applications.

BSC is aware of several documents and presentations prepared by various private groups and public agencies with respect to development of path alternatives that will serve as the foundation for the next phase of this project. Specifically, the Belmont/Waltham Community Trail Alignment Study, dated January 9, 2012 by MAPC; a PowerPoint presentation titled "Mass Central Rail Trail Golden Spike Event," dated April 12, 2014 by Mass Central Rail Trail; and a PowerPoint presentation titled "Belmont Community Path Feasibility Study" by the Town of Belmont Office of Community Development as part of the Preliminary Meeting held on March 30, 2016. The following is a summary of our insights into this project based on these documents with reference to Segments 1 thru 5 according to the Town's presentation:

Insight - Segment 1

Since there is no existing connection to the Mass Central Rail Trail at the Waltham City Line, one of the primary goals of this project will be to determine the best location to terminate the path in the short-term so that it is accessible to the public, safe and yet makes sense from a functional standpoint (i.e. parking, connection, maintenance, cost) for the long-term until a viable connection can be secured, funded and constructed.

The Town has identified two possible routes: one beginning at the Beaver Brook Reservation to the Clark Street pedestrian bridge via Waverley Woods and the Lone Tree Hill Conservation Area; and one along the active rail line beginning at the Waltham City Line to the Clark Street pedestrian bridge. Although the Town is seeking to fund the construction of the portion of the path in the Town of Belmont, there is an excellent opportunity to better serve the community by extending the project limits west to Beaver Street in Waltham as documented in the MAPC study. Extending the project limit will not only connect the neighborhoods to the north and south of the tracks but allow a possible connection to the trail system within the Beaver Brook Reservation directly from the path and thus creating a connection to the Lone Tree Hill Conservation Area via a crossing of Trapelo Rd/Mill St.

Although the MAPC study recommends a possible tunnel under Trapelo Road, this may require significant modifications to the profile grade of the road, an extensive environmental permitting process and substantial cost. Our team includes engineers with tunneling design and construction experience for hundreds of tunnels. Our team will evaluate existing conditions, assess any



Possible connection to Bear Brook Reservation via tunnel under Trapelo Road



Connection to Waverley Woods across Mill Street





Possible access to Western Greenway Trail via Pleasant Street



Possible upgrades/replacement existing pedestrian bridge over active rail line



Possible connection to active rail line and/or to Belmont Center RR Station



risks and develop appropriate conceptual designs along with associated design and construction costs for this location. A less impactful and less expensive option would be to reconfigure the intersection of Trapelo Rd/Mill St and create a surface crossing and then a connection into the Beaver Brook Reservation.

Access to the Waverley Commuter Rail Station platform and surface streets is a critical element of this project. It is important to the vitality of any town to have easy and safe access to its village centers. If a connection can be made along the active rail line from Waltham into Belmont, there needs to be access to the surface streets either through the use of an elongated ramp or a 'switch back' type structure in order for users to traverse the significant elevation difference that currently exists. In addition, the existing bicycle/pedestrian accommodation may need to be addressed with regard to pavement markings, signage and signal controls.

There are many opportunities with respect to a route through Waverley Woods and the Lone Tree Hill Conservation Area. It may be possible to utilize the existing width of Mill Street to install separated bicycle lanes in order to extend the network from Trapelo Road to Concord Avenue and provide a connection to the entrance to the Lone Tree Hill Conservation Area parking lot as well as the Rock Meadow Conservation Area via the Western Greenway Trail.

Possible access points to the Western Greenway Trail might include where it connects to Pleasant Street (i.e. Route 60) at or about Belmont Motors or Artefact (i.e. bus company). Through the use of an easement it may be possible to provide access to the active rail line either on the north or south side of the tracks. Another possible access point to the active rail line could be through the Belmont Public Works yard which would be a great connection to the neighborhoods to the south.

Insight - Segment 2

The Clark Street bridge is an excellent feature to the path not only for the fact it allows users to traverse safely over the active rail line but it provides access to the Lone Tree Hill Conservation Area. A wider, more attractive and functional bridge would be a tremendous asset to the path as it would allow users to pass each other while on the bridge or the ability to stop for a break or observe trains passing under them. Regardless of whether the path continues across Route 60 and onto conservation land or behind the existing retaining wall or along the shoulder as a separated or shared-use bike lane, a controlled signalized crossing (i.e. HAWK or RRFB) will likely be needed at this location in order to stop traffic and allow users to cross.

Essentially, there needs to be access to the bridge either through the use of an elongated ramp or a 'switch back' type structure on the side of the active rail line that is selected in order for users to traverse the significant elevation difference that currently exists. Although, it appears a vertical connection

will be better accommodated along the south side due to the existing topography. In addition, the south side offers more opportunities to connect to the Belmont Center Station using the area behind the curb along Royal Road as well as creating pull-off or seating areas either at the street or track level.



Insight - Segment 3

This section of the path offers excellent opportunities for enhancement, improved access and safety for all types of users. The existing pedestrian access tunnel should be evaluated with respect to damage as a result of the stairs being removed, surface spalling/cracking as well as the possibility of widening the tunnel to allow two-way bicycle/pedestrian traffic. Other improvements might include better lighting, landscaping and improved surface treatment at each entrance.

Options to improve the access to the

track surface on the north side should be explored. In particular, improving the area in front of the north access with respect to ADA compliance, landscaping, lighting, benches, trash receptacles, bicycle racks, interpretive/ informational kiosks, etc.



Visionary concept of access to active rail line via Alexander Ave/Channing Rd

Visionary concept of access to

Belmont Center RR Station

Insight - Segment 4 This section of the path is essential as it

has the potential to connect residential neighborhoods, a school, town center and a commercial area. Use of the Belmont Citizens Forum Parcel will be an important component here which extends from the approximate location of the access drive to Channing Road to the Cambridge City Line. As there is ample distance from the active tracks to the existing edge of rightof-way, separation can be achieved with a decorative fence. The existing access road from Channing Rd/Alexander Ave is

another opportunity for enhancement through the use of vegetative and fence screening to buffer abutters and create a gateway to the path. In addition, it may be possible to install a tunnel below the existing active rail line to the school property and Concord Avenue in order to provide a safe access for students who currently cross the live tracks while maintaining access for MBTA maintenance crews. As previously stated herein, our team includes engineers with extensive experience in the design and construction



of pedestrian/bicycle tunnels including under active rail lines. Our team will assess and evaluate existing conditions, develop conceptual designs and make recommendations as to the type of tunnel that would be appropriate for this location should it be determined a tunnel is the best solution. Several factors will be considered including maintaining rail operations during construction, utilities, impact to traffic operations, businesses and residential property, environmental impacts, construction duration and cost.

Another recommendation would be to explore options related to the existing separated bicycle lanes along Concord Avenue such as implementing better delineation of the lanes or swapping the bicycle lane with the parking lane. This would result in slower vehicle speeds and better protection for cyclists and pedestrians.



Insight - Segment 5

As previously stated, the Belmont Citizens Forum Parcel is vital to connecting the Channing Road access drive to Brighton Street and the existing Fitchburg Cut Off path. Although the crossing of Brighton Street presents a challenge with respect to the method, we believe a safe crossing could be achieved on the surface via a Pedestrian Hybrid Beacon (Rapid Flash or HAWK) or fully actuated traffic signals that would be synchronized with the existing railroad signals.

This section of the path offers fantastic views of the active rail line and the possibility

to enhance the crossing of Brighton Street using landscaping and/or pocket park, seating, interpretive/informational kiosks, etc. There is access to local shops, the MBTA station as well as the Fitchburg Cut-off path are primary features of this segment.

Environmental Coordination

We will initiate contact with the Town's conservation, historic, and cultural commissions in order to address any concerns and impacts resulting from this project. This will include attending site meetings, contacts through letters, and presentations to committees, boards and commissions as well as documenting and incorporating specific requirements into the conceptual design.



along active rail line

Right-of-Way Evaluation

Once the data collection phase is complete and as the conceptual designs begin to take shape, our team will identify any permanent easements or takings as well as temporary construction easements or rights-of-entries required in order to construct the path. This information will be documented and included as part of the final Feasibility Report. If necessary, we will assist the Town and coordinate with affected parcel owners during this phase of the project in order to identify the best solution either through rights-ofentries, temporary or permanent land takings.

Vegetation Management Plan

Due to the fact that selected routes are likely to traverse through sections of conservation land or adjacent to non-public land and as such it may be necessary to perform an evaluation of impacts related to existing vegetation. As a result, we believe a vegetation management plan should be developed as part of this project that may include natural communities, invasive plant species locations, trees to be removed/protected, and trees that threaten the condition and safety along sections of the future path.

Screening

There are several locations along the path that may require the use of either a fence or natural vegetation in order to screen municipal/commercial/industrial/ residential activities including the MBTA property and the Belmont High School. Although we prefer native plant materials for screening, other materials may include picket fence or vinyl coated chain link fence with privacy slats. We will evaluate each location with respect to existing conditions, need, and cost and make recommendations to the Town for approval.

Draft Feasibility Report

Once the initial neighborhood meeting/workshop is held, we will begin drafting the feasibility report. As the project continues and routes are developed and evaluated, the report will be revised to include a summary of inventoried data pertinent to the project corridor, summary of previously developed as well as any newly developed routes, connections, viewing/vista areas, location of new interpretive stations/kiosks, and identification of existing as well as new access points, evaluations and backup analysis. In addition, sketches or diagrams showing typical sections, details, concepts and preliminary cost estimates will also be included in the draft report. A section summarizing available funding sources will also be included in the report.

At the appropriate time the draft feasibility report will be presented to the Town either during a regularly scheduled progress meeting or in a more formal/public setting such as a Board of Selectmen or CPIAC meeting. Our team is prepared to present our findings as required by the Town.



TASK 3 – PRIMARY STAFF HOURS

Name	Hours
William Paille, PE	60
Thomas Loughlin, PE	48
Charles Kalauskas, PE	8
Peter Briere, PE	8
Peter Reed, PE	24
Kellan Lewis, EIT	32
Samuel Offei-Addo, PE, PT	OE 4
Joanna Kavalaris, PE, PTOI	E 8
Micah Morrison, PE, SE	8
Matthew Schwartz, EIT	4
Arzu Kurkoglu, PE	24
Stephen Taylor, PE	24
Andrew Paul, EIT	32
Conor Semler, AICP	24
Jef Fasser, RLA	8
Casey-Lee Bastien, RLA	24
Alexandra Echandi	32
Sean Ewald, PLS	8
William McChesney	24
TOTAL	404

TASK 3.0 Final Feasibility Report & Construction Funding

As part of Phase 1 of the RFP, and once the preliminary feasibility report has been approved and the final neighborhood meeting/workshop has been held, we will finalize the report and submit to the Town for review and ultimately acceptance by the Board of Selectmen. At the appropriate time and at the request of the Town, our team will be prepared to present the report during a regularly scheduled progress meeting or public setting to the Board of Selectmen and/or CPIAC.

TASK 4.0 Meetings & Coordination

As part of Phase 1 of the RFP, and as soon as our team obtains sufficient field data and information about the project and is able to complete the initial route assessment, we will engage with the public and other project stakeholders. We believe the best way to develop support from the community on any project is to meet as early in the process and as often as necessary.

We are anticipating at least three (3) informal meetings/workshops with project stakeholders, including the Town officials, residents, business owners, MBTA representatives, police, fire and rescue, bicycle advocates, local officials, etc. It is imperative this project is presented in a forum that is informal and open to all ideas and opinions in order to eliminate options that will never earn public support and consider those options that just make sense and meet the needs of the community this path will serve.

Our team has extensive experience with many different types of multi-use trails and paths and at variable levels of public scrutiny. Regardless of whether the project involved a trail through a forest with no public involvement or one with tremendous challenges and high profile similar to the Belmont Community Path, the approach is the same. Our team takes ownership and brings a thoughtful approach to both engineering and landscape architecture and seeks to engage and promote participation from every project stakeholder.

Our team will prepare the necessary visual aids including artistic renderings, sign-in sheets, handouts and PowerPoint presentations for each public workshop and progress meetings throughout the project. In addition, the Project Manager will maintain regular communication with Town officials, residents and business owners in preparing for, attendance at and follow up at, each meeting. We anticipate attendance at approximately sixteen (16) official meetings as follows:



TASK 4 – PRIMARY STAFF HOURS

Name	Hours
William Paille, PE	60
Thomas Loughlin, PE	24
Andrew Paul, EIT	24
Conor Semler, AICP	24
Jef Fasser, RLA	4
Alexandra Echandi	16
Angela Vincent	16
Total	168

- One (1) kick-off meeting with Town officials
- Three (3) public informational/workshop meeting with the community
- Five (5) site meetings at least two (2) with Town officials
- Five (5) monthly progress meetings
- Two (2) scheduled meetings with CPIAC
- Presentation to Board of Selectmen

We are also prepared to attend a number of informal meetings with project abutters, residents, and project proponents during the course of the project. BSC has been very responsive to these type of requests on past and current project with the Town.







Section 3: Team Organization, Professional Staffing, and Capacity

Team Personnel Selected to Deliver Belmont A Community Path Feasibility Study

The Town of Belmont is high up on the learning curve with respect to planning processes involved in developing a community path network that creates key linkages to community assets and builds on work completed to date through numerous Belmont staff, groups, and volunteers. Our team is designed to build on your knowledge, incorporate new methods in community path assessment and design, address community concerns such as safety and privacy that have emerged during the last two decades, and position the Town of Belmont to move forward with a selected path segment, funding options, and an achievable plan for ultimate design and construction.

On this premise, BSC proposes an experienced project manager, Bill Paille, PE capable of leading experienced team members (shown below in our project organization) in each of the disciplines needed for conducting the proposed feasibility study.



BSC's team for this feasibility study includes both senior and mid-level professionals. We anticipate the majority of the work will be carried out by very capable mid-level professionals with the advice of more senior staff as needed to support Belmont's Community Path Feasibility Study.

HMM = Hatch Mott MacDonald KAI = Kittelson & Associates, Inc.



Town of Belmont, Community Path Feasibility Study • 3 - 1

BSC has organized our team with careful consideration to each element of the feasibility study and follow-on phases.

Project Manager Applies Previous Rails-to-Trail Planning and Design Experience to Your Project

Belmont's Community Path Project will be managed by Mr. William G. Paille, PE, who has successfully completed several multi-use trail projects for Massachusetts municipalities and has coordinated such projects with MassDOT. As a bicycling enthusiast, Bill is both experienced and invested in the culmination of rail to trail projects. He recently joined BSC Group from the City of Newton where he served as the Director of Transportation and was involved with the city's bicycle group. He brings to this project a unique perspective--Bill understands the municipal situation with both time and budget limitations placed on today's communities to do more with less, as well as the engineering consultant's position that can be dedicated to a project, and achieve a great deal.

Prior to working with the City of Newton, Mr. Paille served as a project manager for another consulting firm where he managed interdisciplinary teams for rail-to-trail and community path projects including serving as project manager for the Cochituate Rail Trail, Framingham; Southwick Rail Trail, Southwick; Somerville Community Path, Somerville; North Suburban Regional Bicycle Transportation Plan (Phase I & II); and the Driftway Trail, Phase I in Scituate.

Bill has a successful approach to rail trail projects. For example, in addition to meeting with the BSC staff who have worked with the Town of Belmont for many years, he has developed a scope and strong understanding of this opportunity through these methods:

- Rode the entire corridor (in the rain!) with a representative of the Metropolitan Area Planning Council (MAPC) and two key personnel from KAI, Andrew Paul and Conor Semler. During the ride, the group experienced all the different connections within segments 1 through 5, and identified the corridor challenges.
- Read many of the resources referenced in the Town of Belmont's RFP chronology and links to prior studies, particularly focused on the 2012 Belmont/Waltham Community Trail Alignment Study, and information presented with the MassCentral Rail Trail Golden Spike Event, 2014.
- Led internal brainstorming meetings following the field visits with team personnel to develop concepts (shown in Section 2, General Approach) that visually present our understanding of the project.

Team Leadership

Serving as principal-in-charge for the project will be Thomas Loughlin, PE, a senior transportation engineer with more than 25 years of professional experience. He brings to the project extensive experience leading interdisciplinary teams in the study, planning, and design of intersection improvements,



Section 3: Team Organization, Professional Staff, and Capacity



Working closely with DCR and the lead planner since 2007, BSC Group provided input to the Master Plan and subsequently led the civil / transportation design for Segments 1, 2, and 3 of the multi-phased Greenway from Boston through Milton.

municipal roadway reconstruction, roadway resurfacing (3R projects), traffic signal projects, economic development infrastructure projects, bridge replacement and retaining wall structures. Importantly, Mr. Loughlin has a thorough understanding of public funding processes having previously served as the MassDOT Highway Division Director of Operations for five years. He also previously served in several senior roles including as a project manager in the engineering expediting section for seven years, and as the District Operations Engineer in the busiest DOT district (Arlington - District 4) for four years. Now serving as Principal of BSC's transportation department, Mr. Loughlin leads the traffic and roadway planning and design projects for state agencies and municipalities. Mr. Loughlin is currently working on the MassDOT Flashing Yellow Arrow Retrofits project, Massachusetts Ave Intersection Improvements in Lexington, Brockton Streetscape Improvements project as well as miscellaneous transportation projects as needed.

Team Advisors Share Historical Area Knowledge

Providing historical area knowledge on an as needed basis to this project are Charles Kalauskas, PE and Peter Briere, PE. Both Charlie and Peter worked as principal-in-charge and project manager for many Town of Belmont projects. On these efforts, and through attendance at Town of Belmont community meetings, they earned deep knowledge of the proposed bike path segments and the overall community. The findings of some Belmont areas studied during the last two decades may not be reflected in the final outcome of the projects. As such, both Charlie and Peter will be available to our team to provide historic information about Belmont, as well as the neighboring community of Waltham, based on their past project experience on Pleasant Street, Belmont Center, Belmont Street and Trapelo Road, to name a few.

As information, Mr. Kalauskas has retired from full-time work with BSC Group and currently serves as Board Chairman. Peter Briere anticipates his retirement during Fall 2016 following the wrap up of several important projects. Both individuals will be available to this project as needed through December 2016.

Qualified and Responsive Project Personnel

BSC's leadership team will call upon qualified project personnel to fulfill the requirements of the Town of Belmont's feasibility study, assigning a highly qualified team of interdisciplinary professionals to provide a full range of services as needed to evaluate the various pathway segments. To facilitate the Town's review of our qualifications, the background and experience of proposed staff is summarized in the table presented on the following pages, which is then followed by detailed resumes that conclude this section.



Team Member / Role	Qualification Highlights
Peter Reed, PE, LEED AP Sr Transportation Engineer	 Senior transportation engineer with over 30 years of experience in bikeway and highway design Served as project manager for providing feasibility input, engineering design, environmental permitting, and construction administration services to DCR for the Neponset River Esplanade project along the Neponset River in Milton and Boston. Performed civil engineering services to the conceptual design of the Assabet River Rail Trail crossing of the MBTA commuter rail line in South Acton. Aternatives were studied, including the widening of the existing vehicular bridge or creating a separate structure adjacent to the existing vehicular bridge.
Kellan Lewis, EIT Transportation Designer	 Transportation engineer currently assisting on the Town of Belmont's Belmont Street/Trapelo Road Reconstruction project with responsibility for review of traffic conditions, traffic signal studies, and communication with MassDOT and the local residents. Transportation engineer for the Town of Lexington's Spring Street Traffic and Roadway Reconstruction. Provided roadway design support including geometric improvements for bicycle accommodations at the main intersection.
Samuel Offei-Addo, PE, PTOE Sr Traffic Engineer	 One of two BSC engineers with the professional traffic operations engineer designation. With over 25 years of experience, Mr. Offei-Addo has contributed to many Belmont projects including Belmont Street, Trapelo Road, Pleasant Street reconstruction, and the Concord Ave Bicycle Lane. Served as traffic engineer for Hartwell Avenue Corridor Study, Lexington for which the final plan involved bicycle striping on Hartwell Avenue from Maguire Road to Woods Street. Senior traffic engineer for planning and design services for improvements to the Route 156 and Sound View Bike Path in Old Lyme, CT. The bicycle lane and associated bicycle accommodations will be linked to other shoreline areas.
Joanna Kavalaris, PE, PTOE Traffic Engineer	 Also holds the professional traffic operation engineer designation, and has earned experience performing analysis of traffic impacts and developing traffic plans. Project experience includes designing lane designations, MColor design plans for presentation drawings and overall analysis of traffic patterns. Traffic engineer for numerous municipal roadway reconstruction projects, including efforts in Chelsea, Lexington, Burlington, Taunton, and Methuen.
Micah Morrison, PE, SE Structural Engineer	 Canaan Southfield Road Bridge over the Umpachene River, New Marlborough, MA, Project Manager for the review of seven municipal bridges and design for the reconstruction of the Canaan Southfield Bridge, which had complete loss of capacity of the exterior steel beams requiring the narrowing of the bridge to one lane. Structural engineer providing design services associated with the replacement of culverts at MassDOT locations statewide. Senior engineer for the design of a unique elevated shielding system to protect vital, live signal and utility wires along with the MBTA Green line tracks during bridge demolition and construction.
Matthew Schwartz, EIT Structural Engineer	 Structural designer contributed to the bridge repair for the Town of Winchendon, MA. Responsible for the design of jacking and shoring systems to temporarily support the bridge during repair installation. Participated in the Boston Bridge Overview and Maintenance Program to review the conditions and needs of the bridges owned by the City of Boston. Recommended repairs with estimated costs, emergency structural repair design and repair construction inspection.



Team Member / Role	Qualification Highlights
Arzu Kurkoglu, PE Rail Engineer HMM	 Experience in design and oversight of complex rail transit, railroad, and civil design projects. Senior project engineer accountable for constructability, phasing, and packaging for the MBTA's Red Line/Orange (RL/OL) Line Infrastructure Improvements Program, a multi-year, \$500M RL/OL Infrastructure Improvements Program. Served as Project Engineer/Team Leader and acted as Task Lead for rail engineering track design and assisted the Project Manager with planning, environmental, and preliminary engineering services for expansion of Boston's South Station on the South Station Expansion (SSX) Project, Massachusetts Department of Transportation (MassDOT).
Stephen Taylor, PE Tunnel Engineer HMM	 Professional engineer with over 40 years in the industry. Has broad experience in the design and construction of specialist tunneling work, many types of foundations, multi-story steel and concrete framed construction. Project manager for the tunnel elements of the Central Artery/Tunnel project in Boston, MA. Supervised the design of three large tunnel sections, which included a unique approach to waterproofing the tunnel by deleting external waterproofing membranes Principal project manager for the review and reporting of the MBTA's Green Line extension project. Responsible for the independent review of the entire project with particular regard to cost and schedule
Andrew Paul, EIT Traffic Designer/Planner KAI	 As a former supervisor in the MassDOT Traffic Engineering Section, offers in-depth understanding of the work processes and how to coordinate between the agency and the communities. Worked with several models for traffic operations analyses, including Sidra, HCS, VISSIM, Synchro, SimTraffic and RODEL. Current projects include Middleboro Rotary retrofit MassDOT design peer review, the Massachusetts Avenue roundabout operations and design in Lexington, MA and the FHWA Work Zone ITS implementation tool.
Conor Semler, AICP Planner KAI	 Senior planner with experience in urban planning, traffic engineering and technical research in complete streets design. Leads KAI's work on the Boston Green Links Plan, an initiative of the Boston Transportation Dept to better connect the City's residents to its parks. Approach identified candidate links with low traffic speed and volume, or with excessive width from which protected facilities could be established. Contributed to the NACTO Urban Bikeway Design Guide by offering engineering insight into the appropriateness and applicability of the cycling treatments. Current projects include PennDOT Statewide pedestrian and bicycle facilities training, Baltimore City bicycle network planning, and the University of Miami Medical Center street circulation study.
Jef Fasser, RLA, AICP, LEED AP Landscape Architect	 Has served as project manager for the Assabet River Rail Trail Planning and design services project in Marlborough, MA; a feasibility study for installing trails through and around a sensitive open space in Blackstone Gateway Park in Worcester, MA; a feasibility study for connecting the East Boston Greenway and Bike Trail to the Chelsea Creek waterfront and open space facilities within the neighborhood; and as landscape architect for the Hingham town-wide comprehensive trails plan that is now moving to design of a first segment. Expertise in the preparation of open space and recreation plans for municipalities including involving public participation, site inventory of existing open space, recreation, and natural resources, surveys, and work with local advisory committees to develop plans to protect and enhance open space and recreational facilities.


Section 3: Team Organization, Professional Staff, and Capacity

Team Member / Role	Qualification Highlights
Casey-Lee Bastien, RLA Landscape Architect	 Landscape architect experienced working on numerous projects in the Town of Belmont. Mr. Bastien served as the landscape architect for the Belmont Center Master Plan, Trapelo Road reconstruction, and the Pleasant Street corridor. Served as landscape architect on the Pittsfield Bike and Pedestrian study to explore feasible routes for a new bike and pedestrian trail link in the Town of Pittsfield. Casey-Lee performed site reconnaissance and collection of map data identification of possible routes. Contributed to the Hingham Community Trails Master Plan in Hingham, MA, which consisted of the development of comprehensive mapping and analysis of existing trail systems and feasibility planning for proposed trail connections.
Alexandra Echandi Trails and Funding	 Ale brings an impressive background in trail planning, design, and maintenance through her past experience serving as a Natural Resource Specialist in charge of Trail Operations and Development for the Massachusetts Department of Conservation and Recreation. Work with DCR entailed involvement with trail planning and design for numerous recreation areas statewide, including the Blue Hills Reservation, Middlesex Fells Reservation, the New England Trail, and along the oceanfront boardwalks at Salisbury Beach.
Sean Ewald, PLS ROW/Easements/Survey	 Performed survey work on more than two miles of Trapelo Road in Belmont, MA to determine Right of Way. Responsibilities included overseeing multiple field crews and office staff to generate ROW lines, utility information, topography and detail. MassDOT, Districts 3, 4 & 6, MA – Project manager for on-call engineering field survey support throughout central and northeastern Massachusetts. MassDOT, Districts 4 & 5, MA - Project manager for on-call base plan preparation services which includes continuous field and office activities for a variety of task assignments, including existing conditions of dense city streets to right-of-way determination for state highway layouts.
Angela Vincent Public Outreach	 As a public outreach planner, Ms. Vincent has been actively engaging communities in planning great communities for over a decade. She has worked with communities up and down the eastern seaboard organizing events and activities of all sizes, from 10-person trainings to conferences of more than 500 people. Served as a staff planner on the planning and conservation commission support for the City of Nashua, NH. Reviewed permit applications, worked with developers on alternative solutions, and prepared recommendations for the NCC and Nashua Planning Board.
William McChesney Cost Estimating-Tunnels HMM	 Mr. McChesney has a background in construction management and estimating in horizontal and vertical construction, traditional AE construction management and substantial experience with hard and conceptual bids in all CSI divisions. Served as cost estimator for the MBTA on rail facilities and maintenance buildings, initial estimating for capital funding of a project anticipated from 2015-2021. Extensively evaluated long lead material cost escalation, existing conditions and proposed work with constrained work hours.



William G. Paille, PE

Project Manager

BACKGROUND

Bill Paille serves as a transportation manager in BSC Group's Boston headquarters, where he provides senior-level guidance for transportation projects throughout the Commonwealth. Mr. Paille has a diverse portfolio of transportation projects, including bicycle trails/lanes, bridge replacements, utility upgrades, traffic improvements, and roadway reconstruction.

As former director of transportation for the City of Newton, Mr. Paille oversaw a staff of 13 personnel with an operating budget of \$2.5 million for the overall maintenance and rehabilitation of the City's transportation network. In this capacity, he oversaw numerous traffic improvement projects, including the installation and upgrades of signal systems, as well as two large-scale roadway improvement projects. An important consideration of these projects was ADA accessibility and pedestrian safety. Another key emphasis of his tenure was the installation of new dedicated bicycle lanes along three City roadways.

PROJECT EXPERIENCE

Southwick Rail Trail (Phase I), Southwick, MA

Project Manager for design of approximately three miles of a new multi-use trail along abandoned rail bed from the Connecticut State Line to Point Grove Road. Work included new hot mix asphalt pavement, new plantings, guard rail, fences, pavement markings and informational signage. Design also included rehabilitation of an existing stone arch bridge, construction of a new pre-fabricated pedestrian bridge and a new tunnel under Point Grove Road. The project also required development of traffic staging plans and details to facilitate the work at Point Grove Road. Design was reviewed, approved and constructed by MassDOT.

Somerville Community Path, Somerville, MA

Project Manager responsible for developing final designs for the Community Bikepath beginning at the intersection with Cedar Street and connecting to the existing bridge at Lowell Street. The project required an extensive community participation program and coordination and was required to meet MassDOT design standards. In addition, the work included permanent and temporary right-of-way acquisitions, utility coordination, and a Phase I soil investigation.

Cochituate Rail Trail, Framingham, MA

Project Manager for design of approximately 1.5 miles of new multi-use trail along abandoned MBTA rail bed from Route 30 to School Street. Project involved placement of final paved surface along entire trail and incorporation of specific enhancements at five key intersections along the trail including information kiosks, benches, bicycle racks, low retaining walls, bollards and landscaping. Design also included traffic signal improvements at the intersection of the trail with Old Connecticut Path and installation of a flashing warning beacon where the trail crossed the TJX driveway. This project required coordination with several town departments including the Department of Public Works,

EDUCATION

B.S., Civil Engineering University of Massachusetts Amherst

REGISTRATIONS

Professional Engineer -MA

AFFILIATIONS

Boston Society of Civil Engineers Section/ASCE



William G. Paille, PE

Department of Community and Economic Development, Planning Board, Board of Selectmen, the Cochituate Rail Trail Committee, Conservation Commission, and the Traffic Advisory Committee as well as the general public, through a series of public workshops and meetings to obtain the necessary permits and approvals. Design and construction was reviewed and approved by both the Town of Framingham and MassDOT and was completed in 2015.

Upper Charles Trail – Phase I & II, Milford, MA

Project Manager for Phase I included design of approximately four miles of new multiuse trail from East Main Street (Fino Field) along existing sewer easement providing a connection to Luisa Lake Park, through town forest, along Route 85 and eventually to the Hopkinton town line along abandoned rail bed. Phase II included design of nearly 2 miles of multi-use trail along abandoned rail bed and utility corridor with two major at-grade street crossings before terminating at Hopping Brook Park in Holliston. Design was reviewed, approved and constructed by MassDOT.

Methuen Riverwalk, Methuen, MA

Project Manager for design of a new pedestrian bridge over the Spicket River Falls Dam and bikepath along the Spicket River. Project was part of an overall Master Plan to revitalize the downtown area by connecting Hampshire Street with Osgood Street. Specific work included a prefabricated steel pedestrian bridge, new intake structure, reinforced concrete retaining walls, stone masonry walls, bituminous concrete pavement, new granite curb and landscaping. This project required a Notice of Intent, Chapter 91 License, Army Corps of Engineer approval, Water Quality Certificate and flood storage loss replication. In addition, this project was entirely on private property which was donated through access easements.

Franklin County Bikeway (Phase I), Deerfield/Montague, MA

Project Manager for design of approximately two miles of new multi-use trail from McClelland Farm Road in Deerfield, along abandoned railbed, across an existing trestle bridge over the Connecticut River into Montague, adjacent to the existing power canal before terminating at the fish ladder. Specific work included new bituminous concrete pavement, installation of new deck and rail system on bridge over Connecticut River, new timber rail fence, new chain link fence and new rail fence along the power canal. Design was reviewed, approved and constructed by MassDOT.

Franklin County Bikeway (Phase III), Greenfield, MA

Project Manager for design of approximately 1.5 miles of new multi-use trail along abandoned service road, from Riverside Drive to Nash Mill Road. Trail traversed under Route I-91, along and over the Green River, and across Nash Mill Road before terminating at Nash's Mill Park. Specific work included a new prefabricated pedestrian bridge over the Green River, bituminous concrete pavement, new timber rail fence and minor drainage improvements. Design was reviewed, approved and constructed by MassDOT.

Driftway Multi-Use Trail, Phase II, Scituate, MA

Project Manager for engineering design and construction administration services for improvements to Phase II of the Driftway Trail, including the construction of approximately 2000 feet of new multi-use trail along New Kent Street and approximately 3000 feet of an exclusive bicycle lane. The project required environmental permitting, construction of a low retaining wall, ADA/AAB compliance, and safety upgrades, including new timber rail construction, signs, and pavement markings.



Thomas J. Loughlin, PE

Principal in Charge/Funding

EDUCATION

B.S., Civil Engineering University of Lowell

REGISTRATIONS

Professional Engineer -MA

AFFILIATIONS

Boston Society of Civil Engineers

American Society of Civil Engineers

American Public Works Association

MassHighway Association

American Council of Engineering Companies (ACEC)



BACKGROUND

Mr. Loughlin has nearly 30 years of experience in the transportation and construction industry and has spent much of his career with the former Massachusetts Highway Department. He has held positions at MassHighway as Project Manager, District Operations Engineer, Assistant to the Chief Engineer and most recently as the Director of Statewide Highway Operations. Mr. Loughlin has extensive experience with MassDOT and FHWA design standards, and MassDOT policies and procedures. As Project Manager, Mr. Loughlin managed a variety of projects including municipal streetscape and roadway reconstruction projects, roadway resurfacing (3R) projects, traffic signal projects, economic development infrastructure projects, and projects involving bicycle facilities, bridge replacement and retaining wall structures.

As the District Operations Engineer, Mr. Loughlin played a critical role in the management of one of MassHighway's largest districts. His duties included review and approval of Chapter 90 municipal funding, review and approval of state highway access permits, review of MassHighway and municipal roadway design projects, and coordination with elected officials and other State agencies and authorities.

As the former Director of Statewide Highway Operations, Mr. Loughlin is familiar with municipal and state highway maintenance and operational needs. He was responsible for Statewide Snow and Ice Operations; Highway Maintenance; Vehicle and Fuel Management; deployment and maintenance of Intelligent Transportation Systems (ITS) equipment; the Traffic Operations Center (TOC); as well as Incident Management and assisting municipalities and other agencies during emergencies.

PROJECT EXPERIENCE

Pleasant Street, Route 60, Reconstruction Project, Belmont, MA

Project Manager for the two mile roadway reconstruction project along Pleasant Street. The design included achieving a uniform cross section within a narrow road layout and the approval of a Design Exception Report. The project also included significant drainage design, new sidewalks and wheelchair ramps designed in accordance with ADA/AAB requirements, minor geometry improvements, and the installation of three new traffic signals and landscaping.

Downtown Streetscape and Roadway Improvements, Brockton, MA

Project Manager for providing streetscape design and roadway engineering services to the City of Brockton including street lighting and streetscape enhancements, roadway safety improvements, pedestrian way lighting underneath five commuter rail bridges, enhancements at key gateways into the city, and roadway grinding, resurfacing and resealing. The project is designed to improve safety and help the downtown area to provide the sense of security needed for pedestrians to visit in the

Thomas J. Loughlin, PE

evening. This, in turn, encourages economic development as more people come to the downtown to work, shop, and eat.

Massachusetts Ave. Intersection Safety Improvements, East Lexington, MA

Project Manager for a roadway re-construction and traffic signal design project for three intersections along Massachusetts Avenue in Lexington, MA. The project area is approximately 3,500 feet long and extends from Pleasant Street to Marrett Road. There are three major unsignalized intersections as well as several pedestrian crossings currently under evaluation by BSC. Main project issues being addressed by BSC include pedestrian and vehicular safety, bicycle accommodation, gaining public support, and sensitivity to historic issues as the entire length of the project is included within the East Lexington Historic District. The project will improve pedestrian, bicycle and vehicular traffic safety as well as improve overall traffic operations in the area.

Hayden Avenue Area Roadway Improvements, Lexington, MA

Project Manager for the roadway reconstruction and intersection improvements in the Hayden Avenue area of Lexington, MA. The project includes the design of a traffic signal at Spring Street and Hayden Avenue, a traffic signal at Spring Street and Concord Avenue, and the design and environmental permitting for new sidewalk and bicycle accommodations for approximately one mile along Hayden Avenue to the intersection of Waltham Street. The project also includes a study, conceptual design and construction cost estimates for the Waltham Street connections to Hayden Avenue and the off ramps from Route 2 westbound. The project design and construction is funded through a MORE grant through the Massachusetts Executive Office of Housing and Economic Development (EOHED), and required strict conformance to fiscal year cash flow goals and limits.

Main Street Streetscape Improvements, Brockton, MA

Project Manager for providing streetscape design and roadway engineering services to the City of Brockton including street lighting and streetscape enhancements, including new decorative lighting, decorative brick banding, street furniture and landscaping. This MassDOT funded project was designed to improve safety and provide improved LED lighting in the downtown area to provide the sense of security needed for pedestrians to visit in the evening. This project is first of many proposed projects linking private development projects with infrastructure improvements.

Main Street, Route 228, Hingham, MA

Project Manager for the five mile roadway resurfacing project along Route 228. The goal of the project was limit work to the existing "footprint" and to not impact the rural character of the roadway or abutting properties. The project included roadway resurfacing, granite curb, paved berms, sidewalks, ADA/AAB accessible ramps, drainage improvements, landscaping, pavement markings, traffic signs and bicycle improvements. Half of the design was completed as a "Book Job" and the other half, through the center of town and restricted ROW widths, was designed with full plans. The roadway cross section required approval of a Design Exception Report based on MassHighway and FHWA controlling criteria.

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Charles A. Kalauskas, PE

Project Advisor - Planning

BACKGROUND

Mr. Kalauskas is BSC's Board of Directors Chairman. In December 2016, he retired from full-time employment with the firm after serving as BSC's President, and contributing more than 40 years to the industry as a transportation planner and civil engineer. Mr. Kalauskas currently serves as a Master Plan Implementation Committee member in his home community of Arlington, MA and is working closely with the Redevelopment Board, Planning Department, Selectmen and Arlington residents, property owners, and consultants for implementing the recommendations contained in the Master Plan.

PROJECT EXPERIENCE

Belmont Street/Trapelo Road Reconstruction, Belmont, MA

Principal-In-Charge for the design of improvements to a 2.5-mile urban arterial linking the cities of Waltham and Cambridge and passing through residential and commercial districts. This project involved extensive review of traffic and pavement conditions, roadway, drainage, and bicycle lane and streetscape design. The corridor includes 13 signalized intersections, all of which were redesigned during the final design effort.

Belmont Street Reconstruction, Belmont, MA

Principal-In-Charge for preliminary through final design of full-depth reconstruction for one-mile of suburban roadway with new signalized intersection. BSC provided traffic engineering for signalization, signage and pavement markings, and intersection layout.

Traffic Improvements at Three Intersections, Belmont, MA

Principal-in-Charge for traffic engineering services for the town's proposed traffic operations and safety improvements at three intersections, including Belmont/Trapelo Road Intersection. Work included preparing contract documents for proposed traffic operations and safety improvements. The project was funded by the Federal Highway Administration, requiring close coordination with the Massachusetts Department of Transportation (MassDOT).

Belmont Street/Trapelo Road Intersection Design, Belmont, MA

Principal-In-Charge for final design and contract documents to redesign this major intersection, addressing: vehicular/pedestrian safety; traffic signalization with exclusive pedestrian phases; coordination with MassDOT, Massachusetts Bay Transportation Authority, and local residents through a public participation program.

EDUCATION

Master in City Planning Harvard University Graduate School of Design

B.S., Civil Engineering Worcester Polytechnic Institute

REGISTRATIONS

Professional Engineer - MA



Charles A. Kalauskas, PE

Concord Avenue Bicycle Lane, Belmont, MA

Principal-in-Charge responsible for overseeing the design of the bicycle lane layout. BSC provided signage and pavement marking for vehicle, bicycle, and parking lanes on roadway segments and intersections.

Belmont Center Parking Study, Belmont, MA

Principal-in-Charge responsible for overseeing of the parking studies in the three main business districts in Belmont. BSC conducted parking inventory and utilization analysis. Changes in the town's parking policy were recommended to improve short-and long-term parking availability and utilization.

Pleasant Street Reconstruction, Belmont, MA

Principal-In-Charge of study and subsequent final design/PS&E preparation to improve aesthetics, traffic flow, parking, and pedestrian safety along a two-mile segment of Pleasant Street/Route 60, an urban arterial traversing two commercial districts, a residential zone and an historic district. Along with roadway and intersection design, scope includes public presentations, aesthetic improvements, and assisting the town in soliciting federal and state transportation funding.

Belmont Uplands Plan Review, Belmont, MA

Principal-In-Charge for the review of traffic impacts associated with the proposed development of a 242,500 sf office or laboratory building, and a 200-unit residential condominium on the same site located off Acorn Road in Belmont. Review included a traffic study report and roadway conceptual improvement plans for the frontage road. BSC recommended additional consideration of several impacted intersections, with associated mitigation.

Hartwell Avenue Corridor Study, Lexington, MA

Principal-In-Charge responsible for providing contractual oversight and community involvement of the study where BSC established baseline traffic conditions, and reviewed bicycle accommodation along Hartwell Avenue.

Bicycle and Pedestrian Trail Study, Pittsfield, MA

Principal-In-Charge for providing planning, public participation, permitting, and design services for a bike/pedestrian pathway to help connect key open space resources in the City of Pittsfield. The new bike path segment is an important opportunity to extend the regional Ashuwillticook Rail Trail into the City and provide an attractive recreational opportunity for community residents.

Assabet River Rail Trail Planning / Design Services, Marlborough, MA

Principal-In-Charge for improvements to a constructed section of the Assabet River Rail Trail to make the trail more inviting, tie the trail into the surrounding neighborhoods and assist in stimulating economic development on and within the area of the trail. BSC provided an analysis of existing conditions and conducted research related to the trail and a study area that extended out through the neighborhoods and areas surrounding the trail. A series of public forums were held, comprised of six focus groups and two public charrettes, to obtain input from City agencies, abutters, and existing and potential users of the trail. The input received through the public forum process, and information gathered through research and analysis, became the basis for design suggestions for key study areas and recommendations for other areas that could be incorporated as either short- or longterm improvements to the trail and surrounding areas.



Peter J. Briere, PE

Project Advisor/Constructability

BACKGROUND

Mr. Briere, a Senior Transportation Engineer with the BSC Group, has more than 40 years of professional experience in transportation planning, traffic engineering and highway design. He provides these services for traffic impact reports, mitigation measure preparation, final design/contract document preparation and traffic maintenance plans for construction. Along with intersection and signalization design, he also provides engineering for highway geometry, right-of-way, grading, drainage, and signing. Mr. Briere's technical experience is complemented by skills in design review, personnel assignments and management, time schedule adherence, budget control, client communications, and community meeting presentations.

Mr. Briere is an expert in roadway design, construction staging/traffic management, intersection configuration, and signalization design and has amassed in-depth knowledge of applicable guidelines and procedures. He regularly works with the Massachusetts Department of Transportation Highway Divison Project Development and Design Guide, ConnDOT Design Standards, the FHWA Manual on Uniform Traffic Control Devices, the ITE Trip Generation Manual, AASHTO standards and Transportation Research Board guidelines.

PROJECT EXPERIENCE

Belmont Center, Belmont, MA

Project Manager for a study and final design to make improvements in the heart of the Town of Belmont, the home of its largest business area, and its Town Offices. This project included a conceptual design process that involved four public information meetings that strived to come up with a consensus of exactly what the public wanted for its Center. At the end of the process the community agreed on a plan that slowed traffic, widened the sidewalks, added sidewalk amenities, provided additional parking, added bicycle lanes, provided pedestrian crossings where none existed, and rehabilitated the "Belmont Common". The public information meetings involved looking at numerous alternatives relative to traffic patterns and landscape treatments for the Center area and proceeded to eliminate them one by one until only one remained. The preferred alternative was then presented to the Board of Selectmen who approved and funded it's construction, which is currently ongoing and scheduled to be completed this summer. The initial design of the project also included a connection from the then anticipated alignment of the Community Path on the railroad embankment to the Center and points west. This was dropped out of the project during final design stage when it looked like the Community Path may not use the railroad corridor after all.

Belmont Street/Trapelo Road Corridor Planning Study , Belmont, MA

Project Manager for the study of a 2.5-mile urban arterial corridor that involved traffic modeling, extensive public participation, conceptual design plans, and cost estimates to receive approval from Massachusetts Department of Transportation Highway Division.

EDUCATION

B.S., Civil Engineering Northeastern University

REGISTRATION

Professional Engineer in MA, CT, NH and NY

AFFILIATIONS

Institute of Transportation Engineers



Peter J. Briere, PE

Belmont Street Reconstruction Project, Belmont, MA

Transportation Manager for the provision of engineering design and surveying services to reconstruct one mile of a two-lane arterial roadway in Belmont, MA and a sidewalk on the south side of the roadway which is located in Watertown, MA. BSC engineers worked closely with town officials to identify design deficiencies within the corridor. Based on this analysis, BSC designed typical cross sections consisting of two 14-foot travel lanes with five-foot sidewalks on both sides, a grass strip for plantings and an eight-foot parking lane.

Pleasant Street (Route 60) Reconstruction Project, Belmont, MA

Project Manager for design of two miles of an urban arterial. Project involved a significant amount of drainage improvements (including a new culvert and pipe jacking under an active rail line), as well as three signalized intersections. Takings and permanent easements were conducted to provide sidewalks and drainage improvements.

Traffic Improvements at Three Intersections, Belmont, MA

Project Manager for traffic engineering services for the town's proposed traffic operations and safety improvements at three intersections, including Belmont/Trapelo Road Intersection. Work included preparing contract documents for proposed traffic operations and safety improvements. The project was funded by the Federal Highway Administration, requiring close coordination with the Massachusetts Highway Department.

Belmont/Trapelo Road Intersection, Belmont, MA

Project Manager for preliminary design of major intersection reconstruction. This project, funded by Chapter 90 state aid and Federal ISTEA monies, involved designs to improve traffic operations and safety conditions. Key elements included a strong public participation component and streetscape improvements.

Star Market Plus, Belmont, MA

Traffic Engineer providing services to the Town of Belmont to review reports and plans for traffic improvements proposed by Star Market in the Waverly Square area.

Alford Street Bridge, Massachusetts Highway Department, Boston, MA

Project Manager, provided design plans for the phased rehabilitation of the Alford Street (Route 99) Bridge over the Mystic River that included reconstruction of the approaches to the bridge, lighting, drawbridge gates, traffic signal controls, traffic control plans, and safety upgrades.

Route 31 Reconstruction for Connecticut Department of Transportation, Coventry, CT

Project Manager for the design of Route 31 realignment through Coventry Village to eliminate a dangerous, substandard curve. The project includes aesthetic enhancements to the roadway as a measure to encourage business development in Coventry Village. The project also includes significant streetscape and drainage improvements brought about in a context-sensitive solutions process. Another aspect of this projects is the careful coordination with local businesses and residents to assure satisfaction with the proposed improvements. BSC prepared and presented a three-dimensional video model to demonstrate proposed improvements and earn widespread project support.



Peter V. Reed, PE, LEED AP

Senior Transportation Engineer

BACKGROUND

Mr. Reed has over 35 years of experience in roadway design and management of roadway projects including shared use path design. He led the civil engineering design for the Neponset River Greenway for DCR along Truman Parkway. He also has considerable experience on roadway projects throughout the state, both for MassDOT and municipalities. He is well-versed in MAAB/ADA issues that affect projects along public ways and on shared use paths. Mr. Reed also develops stormwater solutions for bike paths and roadway design.

PROJECT EXPERIENCE

Neponset River Esplanade for the Massachusetts Department of Conservation and Recreation, Milton to Boston, MA Mattapan Square to Martini Shell

Civil Engineer for design, environmental permitting and construction administration services for the Neponset River Esplanade project along the Neponset River in Milton and Boston. A paved path was created by reducing the width of the existing paved shoulder along portions of Truman Highway in Boston and Milton, and creating an eight-foot wide paved trail (about 2.2 miles in length) in this area and on the non-paved adjacent shoulder. An infiltration trench was installed between the trail and the roadway to collect runoff from the trail for attenuation, groundwater recharge and treatment. Existing catch basins located in the gutter were retained and incorporated into the infiltration trench. New catch basins were installed in the new gutter and connected to the existing drainage system. As part of the park rehabilitation in the adjacent Martini Shell Park and Field House Park, BSC designed recharge systems for driveway and parking lot runoff.

Assabet River Rail Trail Study, Acton, MA

Civil Engineer for the conceptual design of the Assabet River Rail Trail crossing of the MBTA commuter rail line in South Acton. A number of switch backs were required on the trail in order to provide an accessible route up and over the commuter rail line. Alternatives were studied including the widening of the existing vehicular bridge of Route 27 or creating a separate structure adjacent to the existing vehicular bridge.

Watch Factory, Waltham, MA

Project Manager for the reconstruction of the existing Waltham Watch facility located along the banks of the Charles River and listed on the National Register of Historic Places. The facility first came into operation in the 1850s and by the turn of the century grew to be the premier watchmaker in the country. The current owners, a joint venture of Berkeley Investments and First Republic Corporation of America, have converted the former mill buildings into office space for Phase 1, residential units for Phase 2 with a restaurant and café. Phase 3 included additional residential

EDUCATION

B.S., Civil Engineering Cornell University

REGISTRATIONS

Professional Engineer -MA

LEED Accredited Professional

AFFILIATIONS

Boston Society of Civil Engineers

American Society of Civil Engineers

American Public Works Association



Peter V. Reed, PE, LEED AP

units and a parking deck. Two docks were constructed to serve the residents as well as the general public. Mr. Reed led BSC's effort consisting of civil/site design, environmental permitting, construction services and survey support services. The site contains the last portion of the riverwalk to be completed along the Charles, stretching from Boston Harbor to the Norumbega site in Newton. The riverwalk is designed for both bicycle and pedestrian use. Traffic mitigation was required by the city that resulted in modifications to traffic signals at two intersections, design for a new signal located in a nearby residential neighborhood and restriping of Crescent and Prospect Streets along the front of the facility. The City of Waltham also required infiltration/inflow mitigation repairs as part of their permit. The joint venture removed over 150,000 gallons per day for the three phases.

On-Call Engineering and Surveying Services to the MBTA

Project Manager for the provision of on-call engineering and surveying services to support the Authority's activities. Task orders under this contact have included civil engineering design, survey and environmental permitting for a variety of projects, including:

- Mansfield Commuter Rail Station design of two accessible ramps to create an accessible route from the inbound platform to the outbound platform in Mansfield.
- Quincy Harbor Express Commuter Boat Parking Lot Improvements provided design, permitting, and survey for the construction of a new 167space parking lot at the Fore River Shipyard in Quincy

Washington Avenue Reconstruction, Chelsea, MA

Project Manager for the design of improvements to a heavily traveled urban arterial. The multi-faceted project incorporates several goals, including combined sewer separation, water main replacement, roadway and sidewalk reconstruction, and streetscape improvements. The design incorporates traffic improvements, including upgrades to several busy intersections, as well as coordination with the MBTA, whose buses serve the corridor. Pedestrian safety is also a prime consideration, along with MAAB and ADA accommodation , via ramps, pavement selection, and the inclusion of crosswalks. Bicycle accommodation was designed in accordance with MassDOT requirements by providing a route on Washington Avenue for a portion of the project and along adjacent roadways for a narrow section with parking on both sides.



Kellan D. Lewis, EIT

Transportation Engineer

EDUCATION

B.S., Civil Engineering Northeastern University

BACKGROUND

Mr. Lewis is a Transportation Engineer with BSC. His expertise includes developing traffic plans and construction staging plans to maintain vehicular and pedestrian traffic on roadways during urban construction projects, as well as contributing to the study and mitigation of traffic impacts for roadway design projects. In his detailed analysis of traffic impacts, Mr. Lewis has provided the following services: data collection, sight distance analysis, accident analysis, forecasting, trip distribution and assignment, and level of service analysis of adjacent intersections. Mr. Lewis is thoroughly familiar with such software programs as AutoCAD, MatLab, and Synchro.

PROJECT EXPERIENCE

City of Boston, North Washington Street Bridge, Boston, MA

Transportation Engineer for the development of temporary traffic control plans during the recurring repair effort of the North Washington Street bridge between Boston and Charlestown. Various structural beams and stringers of this bridge at different locations on this bridge needed to be repaired, and temporary traffic control plans were developed to accommodate the contractors work. As the locations of these repairs differed from occasion to occasion, the set-ups of these bridge and travel lane closure required a different set-up every time as well. The normal lane arrangement on the bridge is two lanes in each direction, and on occasion the repairs required a full bridge closure in one direction. Sometimes this occurred in the inbound and sometimes in the outbound direction, requiring multiple successive lane closures in the southbound direction or alternatively only a single right or left lane closure in one or both directions.

City of Boston, Alford Street Bridge, Boston, MA

Transportation Engineer for the design of the temporary traffic control plans to accommodate a four stage construction staging of the bridge. One major phase is required to accomplish the demolition and rebuilding of each of the halves of the bridge, and some additional minor phases are required to accomplish efficient and smooth transitions between the two major phases because of elevation differences between completed and yet to be reconstructed structures.

City of Boston, Mass Ave over Huntington Bridge, Boston, MA

Transportation Engineer for the development of temporary traffic control plans for the structural inspection of these two bridges on Massachusetts Avenue over Huntington Avenue and Commonwealth Avenue. Although the inspection of these two bridges each required them to be fully closed to traffic, the horizontal geometry of the adjacent roadway system leading up to the bridge presented unique challenges to develop a tailored design for the TTC plans. For example, the Commonwealth Mall contains a significant number of trees that inhibit the visibility of any temporary signs necessary to be in place for the upcoming roadway closure of the underpass. This factor in combination with the short block length to the upstream intersection



Kellan D. Lewis, EIT

on Commonwealth Avenue near CharlesGate East provides for a limited opportunity to provide adequate warning to the motorists.

Veolia Energy Boston – 18-Inch Steam Line, Boston and Cambridge, MA

Transportation Engineer for BSC's development of traffic control plans to facilitate the installation and construction of an 18-inch concrete encased steel steam line with condensate return line extending from the Gen-On steam generation plant in Cambridge to the existing steam infrastructure entry point on Nashua Street in Boston, MA.

The temporary traffic control plans accommodated the installation of the steam line while minimizing the construction impact on motorists, pedestrians and cyclists. Special challenges for the designers were the limited roadway width on Cambridge Parkway, forcing the creation of special accommodations for passenger vehicles (trucks are not permitted on this one-way road) and emergency vehicles. Special platforms were designed to allow the vehicles to traverse the existing curbing and travel over the existing bike path, directly adjacent to the roadway and then after passing the construction zone return to the roadway.

Other challenges were to provide continuous ingress and egress on Nashua Street for the abutters' staff so that employees were assured of a simple route through the site as part of their commute. Major employers in the area included a hospital, a major league sports facility, and a prison facility. All driveways required closure one point, but through analyses of the internal circulation in the parking lot(s) and by interacting with the abutters, BSC was able to provide employees a safe and easy route.

Repairs to Bridges on I-290 - Worcester, MA

Transportation Engineer for preparation of traffic control plans to accommodate the repair of 12 bridges along Interstate 290 in Worcester. The work included maintaining the flow of traffic during construction for stringer replacement, deck slab modifications for continuity and bridge roadway joint replacements at the 12 bridges.

Belmont Street/Trapelo Road Reconstruction, Belmont, MA

Transportation Engineer for the planning and design of improvements to a 2.5mile urban arterial linking the Cities of Waltham and Cambridge and passing through residential and commercial districts. This project involved extensive review of traffic and pavement conditions, roadway, drainage, and streetscape design. The corridor includes 13 signalized intersections, all of which were redesigned during the final design effort. The project addressed vehicular/pedestrian safety; traffic signalization with exclusive pedestrian phases; coordination with MassDOT, MBTA, and local residents; and public participation.





Samuel Offei-Addo, PE, PTOE

Senior Traffic Engineer

EDUCATION

M.S., Civil (Transportation) Engineering University of Massachusetts

B.S., Civil Engineering University of Science and Technology, Ghana

REGISTRATIONS

Professional Engineer -MA

Professional Traffic Operations Engineer

AFFILIATIONS

Institute of Transportation Engineers

BSC GROUP

BACKGROUND

Mr. Offei-Addo is a Senior Traffic Engineer with BSC Group with 25 years of transportation engineering experience, providing highway/roadway engineering, as well as traffic planning, peer review services and design. His experience in roadway engineering encompasses maintenance and management programs, design of geometric and drainage improvements, condition inspection, resident engineering, and pavement/sub base design. For traffic projects, he provides intersection, signalization and pavement marking design, as well as transportation systems analysis/planning, travel demand forecasting, and development of plans to maintain traffic during construction.

PROJECT EXPERIENCE

Belmont Street/Trapelo Road Corridor Study and Design, Belmont, MA

Traffic Engineer for the study of a 2.5-mile urban arterial corridor that involved traffic modeling, extensive public participation, conceptual design plans, and cost estimates to receive approval from MassDOT. The project involves bicycle accommodation for the entire corridor; the team is also seeking to extend the bicycle accommodation to Harvard Square and Lexington through discussions with municipal officials in Cambridge and Lexington. Bike accommodation is achieved through the careful use of signalization, signage, and striping, as well as traffic control measures, such as turning lanes, to allow for the safe passage of bicyclists along the corridor.

Belmont Street/Trapelo Road Reconstruction, Belmont, MA

Traffic Engineer for the planning and design of improvements to a 2.5-mile urban arterial linking the Cities of Waltham and Cambridge and passing through residential and commercial districts. This project involved extensive review of traffic and pavement conditions, roadway, drainage, and streetscape design. The corridor includes 13 signalized intersections, all of which were redesigned during the final design effort.

Belmont Street Reconstruction, Belmont, MA

Transportation Engineer for preliminary through final design of full-depth reconstruction of one mile of suburban roadway with new signalized intersection. Mr. Offei-Addo provided traffic engineering for signalization, signage and pavement, and provided intersection layout. BSC designed typical cross sections consisting of two 14-foot travel lanes with five-foot sidewalks on both sides, a grass strip fro plantings and an eight-foot parking lane.

Pleasant Street Reconstruction for Town of Belmont, MA

Traffic Engineer for preliminary through final design of two-mile segment of Pleasant Street (Route 60), an urban arterial with traffic signals. In order to provide adequate sidewalk and drainage improvements, permanent easements were

Samuel Offei-Addo, PE, PTOE

conducted. There were a significant amount of drainage improvements completed, including a new culvert and pipe jacking under an active rail line.

Concord Avenue Bicycle Lane, Belmont, MA

Traffic Engineer responsible for designing bicycle lane layout. Mr. Offei-Addo provided pavement marking and signage for vehicle, bicycle, and parking lanes on roadway segments and intersections.

McLean Hospital, Belmont, MA

Traffic Engineer for review of the impact of the proposed full-scale development on the local roadways system together with proposed mitigation plans. Mitigation plans included roadway widening and the addition of two new traffic signals, which would become part of an interconnected signal system comprised of six signals. BSC recommended changes in the mitigation design plans to better accommodate pedestrians and bicyclists and to improve traffic flows through the optimization of signal timing. BSC worked closely with the development team's traffic consultant to revise plans and gain approval from the Town Planning Board.

Hartwell Avenue Corridor Study, Lexington, MA

Project Manager/Senior Transportation Engineer responsible for establishing baseline traffic conditions, and reviewing bicycle accommodation along Hartwell Avenue. BSC performed extensive data collection, determined current vacancy rates, prepared computer simulations of various alternatives of traffic operations, and assessed impacts as a result of proposed striping for bicycle lanes. The results of the analysis were presented in several meetings with town officials and the Traffic Mitigation Group. A final plan was prepared for construction which involved bicycle striping on Hartwell Avenue from Maguire Road to Woods Street.

Route 156 and Sound View Bike Path and Improvements, Old Lyme, CT

Senior Traffic Engineer for planning and design services for improvements to the Sound View Beach area and the design of associated bicycle accommodations linking to other shoreline areas. The BSC project team completed an assessment of existing facilities, creation of a master plan for new facilities, and the preparation of conceptual designs. This included enhanced parking in a dedicated lot, defined onstreet parking, kiosk-type parking meters, pedestrian walkways, "green spaces" for picnicking and passive recreation, and bathroom facilities. BSC is currently designing a shoreline bicycle route from the Sound View Beach area to the vicinity of Interstate 95, a route of approximately 4.5 miles on town and state roads.

The Watch Factory, Waltham, MA

Senior Transportation Engineer directing traffic studies for the redevelopment of the former Watch Factory, a 150-year-old mill complex, into a modern mixed-use development comprised of restaurant, residential, and office space. The work included analysis of existing conditions and forecasting future conditions as well as identifying measures to mitigate project related traffic impacts.





Joanna Kavalaris, PE, PTOE

Traffic Engineer

EDUCATION

B.S., Civil Engineering Tufts University

REGISTRATIONS

Professional Engineer -MA

BACKGROUND

Ms. Kavalaris has earned experience performing detailed analysis of traffic impacts, services of which include data collection, sight distance analysis, accident analysis, forecasting, trip distribution and assignment, level of service analysis of adjacent intersections, and possible mitigation scenarios. She has also been responsible for developing traffic plans and construction staging plans to maintain vehicular and pedestrian traffic on roadways during urban construction projects.

PROJECT EXPERIENCE

Trapelo Road, Belmont, MA

Transportation Engineer developed construction plans including roadway design, horizontal and vertical alignments, curb tie plans, signing and pavement marking plans, existing and proposed cross sections. Roadway design includes lane designations, wheelchair ramp design, street furniture and landscape elements. Also developed MColor design plans for presentation drawings.

Neponset River Esplanade, Milton & Boston, MA

Transportation Engineer for the design of the proposed multi-use trail along the Neponset River. Included the design of an 8-10 foot multi-use trail including accessible ramps and relocation of utilities where necessary. Assisted with preparing drawings and calculations related to impacts to resource areas, as related to the Environmental Notification Form. Construction plans included the preparation of typical sections and general plans, as well as coordination with the landscape architect. Design of the trail included providing access points for the neighborhood, providing connections to existing sidewalks, and analyzing safety measures as detailed by DCR and AASHTO.

Transportation Planning for the Redevelopment of Northwest Park, Nordblom Companies, Burlington, MA

Transportation Engineer for providing traffic engineering services for the redevelopment of the Northwest Park, a 245-acre area, located right off of the Middlesex Turnpike, made up of second class office space dating back to the 60's and now being redeveloped into a mixed use property consisting of office, retail and restaurant space. BSC prepared conceptual improvement plans and cost estimates, and updated trip generation analysis for submission to the Planning Board.

Transportation Planning /MEPA filing for the Expansion of Myles Standish Industrial Park, Taunton, MA

Transportation Engineer for providing traffic engineering services in conjunction with the planning, permitting and design of the 150-acre expansion to Myles Standish Industrial Park (MSIP), as well as another 70 acres which are being planned for the development of a life science center, to be accessed from the Bay Street entrance. Transportation issues addressed include pedestrian and bicycle amenities,



Joanna Kavalaris, PE, PTOE

truck routes, traffic impacts, and transportation demand management (TDM). BSC performed comprehensive traffic impact analysis using Synchro software for the full build-out of MSIP, and prepared conceptual improvement plans and cost estimates, for submission to MEPA/MassDOT. Coordination is currently underway with GATRA to expand the existing fixed bus route service through the Industrial Park

Traffic Analysis for Gardner Urban Renewal Plan, Gardner, MA

Transportation Engineer for traffic engineering services for the evaluation of several intersection options to improve safety and traffic operations at West Gardner Square in downtown Gardner. The work included the collection of vehicular and pedestrian data, projection of traffic due to the Urban Renewal Project, evaluation of roundabout and traffic signal options at the intersection of Main Street/Parker Street/Central Street/West Street/Vernon Street. BSC prepared conceptual improvement plans and cost estimates, and simulated traffic operations using Simtraffic software for a presentation to the Traffic Commission.

Washington Avenue Reconstruction, Chelsea, MA

Transportation Engineer for the design of improvements to a heavily traveled urban arterial. The multi-faceted project incorporates several goals, including combined sewer separation, water main replacement, roadway and sidewalk reconstruction, and streetscape improvements. The design incorporates traffic improvements, including upgrades to several busy intersections, as well as coordination with the MBTA, whose buses serve the corridor. Pedestrian safety is also a prime consideration, along with MAAB and ADA accommodation, via ramps, pavement selection, and the inclusion of crosswalks.

11 West Broadway, South Boston, MA

Transportation Engineer assisted with the development of traffic control plans associated with the site construction at the proposed 11 West Broadway Project. This project included the construction of a mixed-use development including retail, residential, and parking components. Temporary traffic control plans were developed in order to provide contractor vehicular access to the site, as well as providing a crane operation area. Unique challenges to the site included maintaining roadway vehicular traffic, providing a safe pedestrian travel path, maintaining MBTA bus stop areas near a busy Red Line MBTA station, and maintaining on-street parking for nearby commercial businesses.

Massachusetts Ave. Intersection Safety Improvements, East Lexington, MA Transportation Engineer for a roadway re-construction and traffic signal design project for three intersections along Massachusetts Avenue in Lexington, MA. The project area is approximately 3,500 feet long and extends from Pleasant Street to Marrett Road. There are three major unsignalized intersections as well as several pedestrian crossings currently under evaluation by BSC. Main project issues being addressed by BSC include pedestrian and vehicular safety, bicycle accommodation, gaining public support, and sensitivity to historic issues as the entire length of the project is included within the East Lexington Historic District. The project will improve pedestrian, bicycle and vehicular traffic safety as well as improve overall traffic operations in the area.



2



Micah C. Morrison, PE, SE

Structural Engineer

EDUCATION

M.S., Structural Engineering, University of Massachusetts Amherst

B.S., Civil Engineering, Worcester Polytechnic Institute

REGISTRATIONS

Professional Engineer in MA, CT, ME, VT and HI

AFFILIATION

American Society of Civil Engineers

CERTIFICATES

NCEES Nation Record NCEES Model Law Structural Enginee

NCEES Exams Structural I & Structural II

PUBLICATION

Morrison M., Brena S. "Design Using Strut & Tie Method" American Concrete Institute (ACI) Structural Journal Published June 2007

BSC GROUP

BACKGROUND

Mr. Morrison has a comprehensive background in structural design and analysis with strong project management skills. He has over 13 years of experience involving a varied mix of unique structural engineering projects. His technical experience focuses on bridge engineering, demolition, and construction along with diverse residential and commercial projects. Due to Mr. Morrison's academic credentials and professional practice he has been extensively involved in the engineering necessary for bridge and building construction.

PROJECT EXPERIENCE

MassDOT Impact Damage, Sturbridge, MA

Structural Engineer designed repair for collision damage from an over-height vehicle striking the Cedar Street Bridge, located above the eastbound lane of Interstate I-90. Mr. Morrison conducted a finite element analysis of the damaged stringer to determine the extent of the repairs and optimum rehabilitation methods to utilize. Past construction experience allowed the design to limit I-90 lane closures to a minimum and preserve uninterrupted traffic flow on Cedar Street.

MassDOT Structural and Safety Improvements, Fitchburg, MA

Structural Engineer working closely with MassDOT District 3 to develop comprehensive bridge and construction drawings for D3's on-call construction contracts. Designed the replacement of severely deteriorated concrete tee beams and all necessary contractor submissions including demolition plans, work platform designs and unique formwork support systems. In addition, BSC also provided Environmental, Highway and Traffic engineering for this collaborative effort.

MassDOT Culvert Replacements, Statewide, MA

Structural Engineer providing design services associated with the replacement of culverts at MassDOT locations statewide. Following BSC's hydrologic and hydraulic review and modeling for the locations, Mr. Morrison provides structural design for cast-in-place headwalls, as well as constructability review and cost analysis. To date, projects have been completed in Westford, Uxbridge, and Upton.

Stormwater Management Upgrades under MassDOT Impaired Waters Program, Statewide, MA

Structural Engineer for design services associated with the design and construction of Best Management Practices for stormwater management system improvements at MassDOT locations throughout the Commonwealth. Improvements have been undertaken as part of MassDOT's Impaired Waters Program, which operates with the mission of improving stormwater management measures along MassDOT-owned roadways to prevent pollutants from discharging to impaired water bodies. Mr. Morrison's work under this program has involved structural review for proposed coring

Micah C. Morrison, PE, SE

into an existing culvert, as well as design of a level spreader to provide even distribution of water exiting the system in order to avoid erosion and channeling.

Canaan Southfield Road Bridge over the Umpachene River, New Marlborough, MA

Project Manager for the review of seven municipal bridges and design for the reconstruction of the Canaan Southfield Bridge, which had complete loss of capacity of the exterior steel beams requiring the narrowing of the bridge to one lane. BSC tested, evaluated, and modified the existing substructure for reuse, along with designing new retaining walls, bridge superstructure and traffic safety controls. The bridge and safety controls will be completely reconstructed and updated to meet current MassDOT and AASHTO LRFD standards. The roadway profile was raised slightly to accommodate the increased bridge elevation and eliminate drainage issues. The bridge width matches the existing width and approach roadways at approximately 26 feet. To correct and prevent future river bed erosion, the existing abutments were armored with protective rip-rap and the existing scour pockets were filled. Due to the restrictions of a MassWorks Infrastructure Grant, BSC's design team was required to complete permitting and issue construction documents in just ten weeks.

Congress Street Bascule Bridge, Boston, MA

Project Manager for the construction engineering associated with the multi-phased historic rehabilitation. Completed thorough analysis of the existing bridge structure loaded with 98,000 lbs. from a Caterpillar 345 Excavator. Designed a unique temporary support system for the bridge superstructure, which enabled it to remain open to vehicular traffic during reconstruction.

Bridge Preservation (8 Bridges), Webster, MA

Project Manager for engineering work associated with rehabilitating eight bridges along I-395. Coordinated multi-disciplined engineering and support staff team to facilitate the timely response to MassDOT's stringent project requirements; detailed scope of work, submittal deadline, and budgetary restraints. In addition, performed critical project cost estimates and bid reviews.

Westfield River Bridge, Westfield, MA

Project Manager for the sequential demolition of a 273-foot Pratt Petit Truss Bridge over the Westfield River. Designed a temporary support system, which allowed deconstruction to proceed over an environmentally sensitive site. Performed a comprehensive stress analysis of the global effects to the bridge as truss sections were separated and removed during staged demolition.

Sprague Street Bridge, Boston, MA

Project Manager in charge of the safe, but timely removal of two massive truss spans over MBTA railroad tracks, within a 4-hour time window. Designed the demolition to utilize two 300 ton capacity Manitowoc 2250 cranes to remove each of the two spans in one pick. Reverse engineered the truss spans to allow removal of all non-essential members in order to lighten the structures to be within the cranes allowable lifting limits.

Temporary Shielding of MBTA Tracks, Newton, MA

Senior Engineer for the design of a unique elevated shielding system to protect vital, live signal and utility wires along with the MBTA Green line tracks during bridge demolition and construction. Project also included preparing a sequential demolition procedure and drawings.



Matthew Schwartz, EIT

Structural Engineer

EDUCATION

B.S., Civil Engineering University of Massachusetts Lowell

REGISTRATIONS

Engineer In Training

CERTIFICATIONS

AMTRAK Contractor

Keolis RWP-Trained Contractor

MBTA ROW Contractor

OSHA 10 Hour Construction Safety and Health

AFFILIATIONS

American Society of Civil Engineers

Boston Society of Civil Engineers Section



BACKGROUND

Mr. Schwartz is a structural engineer in BSC Group's Boston office. His work is largely focused on providing bridge and culvert design, maintenance, and rehabilitation services to a wide variety of clients. His experience working on MassDOT projects has helped him build a strong understanding of project development and procedures for each project phase in the MassDOT system. Notably, Mr. Schwartz is AMTRAK contractor certified, Keolis Road Worker Protection certified, and the MBTA ROW safety training requirements certified.

PROJECT EXPERIENCE

Town of Winchendon, Bridge Repair, Winchendon, MA

Structural Engineer responsible for the design of repairs to facilitate the re-opening of the High Street Bridge. The bridge was closed due to localized steel deterioration at the beam ends. Designed jacking and shoring systems to temporarily support the bridge during repair installation. Contract documents were submitted to MassDOT for Chapter 85 review.

Boston Bridge Overview and Maintenance Program for Various Locations in Boston, MA

Structural Engineer providing assistance for review of conditions and needs of the bridges owned by the City of Boston. The scope of work includes recommended repairs with estimated costs, emergency structural repair design, repair construction inspection, along with routine bridge inspection to help guide future construction issues.

MBTA Bridge Inspections, Statewide, MA

Structural Engineer for the inspections of twenty-one MBTA owned pedestrian bridges. Performed field assessments on structural elements and site conditions, drafted sketches from field measurements, and created Routine Pedestrian Bridge Inspection reports using 4D to submit for MBTA review.

MassDOT Bridge Replacement, Winchendon, MA

Structural Engineer providing assistance for the replacement of bridge W-39-015 (182). Mr. Schwartz aided in the completion of the Bridge Type Selection document, which provided and examined all feasible alternatives for bridge replacement. Thereafter, worked on the Bridge Sketch Plans for the selected replacement alternative by MassDOT, which also included cost estimates for structural items and staged construction plans. Assisted in calculation checks for pile loads and retaining wall capacity.

Mass Development & MassDOT Bridge Replacement, Devens, MA

Structural Engineer assisting in the completion of the Bridge Type Selection document. Created plans for feasible bridge replacement alternatives, staged construction methods, and assisted in project development.

Matthew Schwartz, EIT

MassDOT Bridge Demolition, Pelham, MA

Structural Engineer collaborating in the creation of bridge demolition plans for two bridges. Determined the limits of demolition, proper equipment (cranes), loading and rigging procedures, and shielding methods for safe demolition practice. Performed calculation checks for loading and shielding capacities.

MassDOT & Town of Sheffield Culvert Replacements, Sheffield, MA

Structural Engineer providing assistance for the replacement of two culverts. Created sketch plans for culvert demolition, proposed bridge construction, and control of water. Produced detour and traffic management plans, along with cost estimates for structural and highway items. Assisted in calculation checks for foundation design, bridge loading capacity, and retaining wall capacity.

MassDOT Impact Damage, Sturbridge, MA

Structural Engineer aided the designed repair for collision damage from an overheight vehicle striking the Cedar Street Bridge, located above the eastbound lane of Interstate I-90. Created repair plan drawings and performed calculation checks for the proposed steel beam replacement.

MassDOT Structural and Safety Improvements, Fitchburg, MA

Structural Engineer provided assistance in the development of construction, demolition, and proposed superstructure replacement plans. Aided in calculation checks for safety curb and sidewalk capacity, deck reinforcement and loading, moment slab capacity, and demolition.





Education

MS, Construction Engineering and Management, Berlin Technical University, Berlin, Germany, 2002

MS, Transportation Engineering, Berlin Technical University, Berlin, Germany, 2002

BS, Civil Engineering, Ortadogu Technical University, Ankara, Turkey, 1995

Registrations

Professional Engineer CA, C 67875, 2005

Years in Practice - 14

Memberships

Women's Transportation Seminar (WTS), Programs Committee Co-Chair

American Public Transportation Association (APTA), Track, Noise, Vibration Committee Member

The American Railway Engineering and Maintenance-of-Way Association (AREMA)

New England Railroad Club (NERRC)

American Society of Civil Engineers (ASCE)

Experience Summary

Ms. Kurkoglu is a registered professional engineer with progressive experience in design and oversight of complex rail transit, railroad, and general civil design projects. She has broad experience in all facets of engineering design, from analysis of project alternatives to design development and final design, with a specific focus on track: alignments, details, material procurement packages, and development of plans, specifications, and estimates. Her project experience includes light rail, heavy rail, and freight and commuter railroad, as well as bus rapid transit systems. She has extensive interaction with various public jurisdictions and private stakeholders and a demonstrated understanding of design engineering and railroad standards. Ms. Kurkoglu is proficient in MicroStation, AutoCAD, and InRoads. She has excellent communication skills leading and building multi-disciplinary teams.

Select Project Experience

Red Line/Orange Line (RL/OL) Infrastructure Improvements Program, Massachusetts Bay Transportation Authority (MBTA), Boston, MA

Senior Project Engineer accountable for constructability, phasing, and packaging. Responsibilities include providing a targeted effort to determine limitations of operation and access restraints for packages that will begin construction during the term of this initial proposal; development of Contract Packaging Plan; and identifying Contract interfaces, logistics, staging access, and construction sequences. The RL/OL Infrastructure Improvements Program is a multi-year, \$500M RL/OL Infrastructure Improvements Program. The infrastructure improvements will support the existing Orange Line and Red Line systems by improving infrastructure prior to the arrival of new and enlarged fleets in 2018 and 2019.

Green Line Extension (GLX) Project, Massachusetts Bay Transportation Authority (MBTA), Boston, MA

Served as Project Engineer/Team Leader responsible for conducting track design technical reviews and accountable for consistency among disciplines and compliance with standards and specifications. Green Line Extension will extend the MBTA's Green Line light rail service from a relocated Lechmere Station in Cambridge to College Avenue in Medford and to the Union Square in Somerville, MA. Work included relocation of commuter rail track, construction of 4.3 miles of light rail track, relocation of Lechmere Station, construction of six additional stations, reconstruction of several bridges along the corridor, construction of retaining and noise walls, and construction of a vehicle maintenance facility and vehicle layover/storage yard. The program is estimated at \$1.9B.

South Station Expansion (SSX) Project, Massachusetts Department of Transportation (MassDOT), Boston, MA

Served as Project Engineer/Team Leader and acted as Task Lead for rail engineering track design and assisted the Project Manager with planning, environmental, and preliminary engineering services for expansion of Boston's South Station. Led design team ensuring completeness and accuracy of rail engineering track design effort. Served as technical liaison with Client. Interfaced with public and private stakeholders. Supported Project Manager by establishing project structures, such as project website, which enhanced team communications on project deliverables and key issues. Involved in the development of project materials, procedures, and protocols, as well as engineering design standards. Developed schedule for team of 13 subconsultants and ensured progression of project deliverables meeting Client expectations. Spearheaded capital cost estimate preparation for the entire program.

The South Station Expansion is part of the vision for the New England High-Speed and Intercity Rail Network. The project includes analysis of project alternatives and preliminary engineering (30% design) required for the expansion Boston's South Station, and development of new rail vehicle layover facility, as well as the completion of all necessary environmental reviews. Work includes constructing seven new tracks (which will expand South Station capacity from 13 to 20 tracks) and reconfiguring three critical track interlockings. The expansion will support a significant increase in Amtrak Acela Express High-Speed Rail service to Boston along with planned MBTA Commuter rail service expansion. The program is estimated at \$1.7B.



Education

BS., Civil Engineering, University of Leeds, 1976

Registration Professional Engineer MA, 40029, Structural,

MA, 40029, Structural 1996

Years in Practice – 40

Memberships

ASCE/BSCE (Chairman of Boston Society of Civil Engineers/Structural Group, 2011/12)

Awards

Commander of the British Empire (CBE), 2005

Experience Summary

Mr. Taylor has broad experience in the design and construction of a variety of civil and structural engineering projects, including specialist tunneling work, many types of foundations, ground treatment, support of excavations, and bridgeworks, together with multi-story steel and concrete framed construction. The projects he has worked on have often been complex and multi-disciplinary, and in densely developed urban environments. He is experienced in the management of large, multi-disciplinary teams of engineers and other professionals on all elements of projects from concept through to detailed design and construction management. He is a "hands on" manager with a reputation for providing projects that are cost effective, constructible, and maintainable. Mr. Taylor also has earned a reputation for innovative thinking and for developing solutions to complex challenges that have resulted in significant cost and schedule benefits, while reducing project risk. He is often asked to provide specialist technical advice relating to value engineering, peer review, and quality control for complex projects, both at the planning/design phase, and during construction.

Select Project Experience

Westport and Westhaven/Orange Stations Pedestrian Access Walkways Beneath Rail, Connecticut DOT, CT

Project Manager (for below ground work, liaison with rail operator, and all major support of excavations) associated with pedestrian access walkways to be constructed beneath operating rail tracks. This included structural work, tunnel work, and geotechnical investigations together with close coordination with, and advice to, the contractor and the rail operator (Metro North) regarding constructability issues.

Central Artery/Tunnel Project, Contract D009A, I-90/I-93 Interchange, MassDOT-Highway Division (formerly Massachusetts Highway Department), Boston, MA

Project Manager for tunnel elements on this contract. This included the technical supervision of the design of three large tunnel sections (80 ft. wide x 40 ft. high x 350 ft. long), installed by tunnel jacking methods, and associated cut and cover tunnel sections. These were constructed within deep excavations using both braced and cantilevered slurry walls with up to 75 ft. excavation depths through complex, variable ground conditions beneath the water table. Several ground improvement techniques were utilized for the tunneling and excavation works, including jet grouting, deep soil mixing, and large-scale ground freezing. The tunnel design included a unique approach to waterproofing that included the deletion of external waterproofing membranes. This proved to be extremely successful compared to more traditional waterproofing techniques. Provided ongoing specialist technical advice to the program manager during the construction period at the request of the client. This project was the recipient of ASCE's Charles Pankow Award for Innovation 2003, in addition to numerous other national and international awards.

Green Line Extension Project, Massachusetts Bay Transportation Authority, MA

Principal Project Manager and Owner's Representative for the review and reporting of the \$1.9B extension to the MBTA's Green Line. Responsible for independent review of the entire project with particular regard to cost and schedule, although also taking a lead in value engineering, peer review, and cost recovery efforts. The project comprises approximately 4.5 miles of twin light rail track to be constructed in a corridor shared with active commuter rail service which is to be moved within the corridor to create the additional space for the new light rail track. Also included is the construction of seven new stations, and a vehicle maintenance facility, together with the purchase of 24 new vehicles. The project is in a very dense urban environment.

Numerous Bridges, MassDOT-Highway Division (formerly Massachusetts Highway Department), MA

Project Principal for the design of several bridge reconstruction and refurbishment projects. Projects included the rebuilding of a historical moveable swing bridge (\$30M value), historical masonry multi-span arch bridge, a bridge over active rail tracks, and several bridges over busy roadways.



Several jacked tunnel structures and bridges carrying Rail tracks, USA, Canada, Taiwan and England

This experience includes working both as the Prime Consultant, and Design Lead for a Design/build contractor on numerous tunnel and bridge structures that were constructed under live/operating rail tracks using tunnel jacking and bridge sliding techniques. Structures included single and two-span superstructure bridges founded on abutments and piers constructed using tunnel jacking methods. Superstructures included steel/concrete decks, and pre-stressed portal structures. Projects also included large "box section" monolithic structures, either mined using specialist anti-drag elements, or installed using fast-track "open cut" installation methods. The completed "tunnels" ranged in size from 10ft square sections for pedestrian use, through to sections as large as 80ft. wide x 40ft. high, to carry entire highway alignments.

Urban Ring, Executive Office of Transportation, Boston, MA

Project Director for the conceptual design of an approximately two mile long tunnel, which will form a key segment of the Urban Ring. This bus rapid transit project would link travel origins and destinations within a circumferential corridor, or "ring", located roughly one to two miles outside of downtown Boston.

North Dorchester Bay CSO Tunnel, Massachusetts Water Resources Authority (MWRA), Boston, MA

Project Director for construction management, resident engineering, and inspection of this two mile long, 19 ft. diameter tunnel constructed at shallow depth in mixed/soft ground conditions beneath the water table. This tunnel was constructed using a sophisticated earth pressure balance tunnel boring machine. It is lined with high tolerance concrete segments that are double-gasketed and bolted. Advice was given to the project designers, prior to completion of the design documents that resulted in numerous changes to the designs and specifications. The project also included shafts constructed using slurry wall techniques, jet grouting, and numerous significant structures to connect surface drainage conduits to the new tunnel.

Tunnel Inventory and Inspection, MassDOT-Transit Division (formerly Massachusetts Bay Transportation Authority), Boston, MA

Project Manager for this project, which required a comprehensive inventory and inspection of all tunnel sections of the Blue, Green, and Orange Lines for MBTA. This also included over 20 miles of running tunnel and underground station inspections. Tunnel types included cut and cover and mined types of various styles and ages. This included the oldest transit tunnels and stations in the US – many sections having historical significance. Work was generally undertaken during the night time track shut down periods, so that passenger service was not affected.

Restoration of Sales Creek Drainage System, Commonwealth of Massachusetts, Department of Conservation and Recreation, Revere, MA

Project Principal for the design of large diameter culvert replacements draining parts. The culverts had been found to be in poor structural condition, with severely reduced hydraulic capacity. This required the design of emergency repairs, bid, and constructed on a "fast track" basis. The project included serving as liaison with the local communities and various agency departments and other parties with an interest in the work areas. Initial emergency work was followed by a more comprehensive repair/replacement program to improve the drainage and hydraulic capacity of the system to lower the risk of future flooding to the area.

Tunnels at Braintree/Weymouth, Massachusetts Water Resources Authority (MWRA), Boston, MA

Project Manager - Tunnel Sections. This project included three separate tunnels. A 2.5 mile long, 13 ft. diameter rock tunnel, constructed using a tunnel boring machine, a 2,000 ft. long rock tunnel, approximately 13 ft. by 13 ft. constructed by drill and blast methods, and a six ft. diameter, soft ground tunnel constructed using a slurry face, microtunnel machine. In addition to the tunneling, responsibilities included the design of the access shafts, which were constructed by a variety of techniques including slurry walls, drill and blast, and sheet piling.



Andy has over 13 years of experience in traffic operations, design, construction, project management, and program management. In particular, Andy has developed an expertise with roundabouts and rotary retrofits and has been instrumental in the statewide implementation of roundabouts in Massachusetts, where there are over 100 rotaries. While working at MassDOT Andy was the statewide roundabout coordinator. He has also been involved at the national level with continuing education and research with the TRB and ITE as a committee member, presenter, facilitator, and subject matter resource. As a project manager Andy oversaw innovative project delivery including accelerated bridge construction and design-build contracting. Andy was the Project Manager for the statewide conversion to All Electronic Tolling and he worked on the Fast 14 bridge replacement project. He has collaborated with transportation partners at the local, regional, state, and federal level.

ANDREW PAUL

Senior Engineering Associate

EDUCATION

Masters Business Administration, Fitchburg State University

BS Civil Engineering, Catholic University

YEARS OF EXPERIENCE

13

LICENSES

Bridge Safety Inspector, FHWA-NHI

EIT: MA

AFFILIATIONS

Institute of Transportation Engineers, Member

Young Professionals in Transportation Boston Chapter, Past Chair & De-Founder Committee, Member

TRB Operational Effects of Geometrics Committee AHB65, Member

TRB Roundabout Committee ANB75 , Member

Institute of Transportation Engineers, Roundabouts Committee, Member

MassDOT Transportation Asset Management Steering Committee, Past Chair

FHWA Every Day Counts II: Intersections and Interchange Geometrics, Past Co-Chair

MassDOT Transportation Roundtable, Past Member and Moderator

AWARDS

2007 Commonwealth Performance Recognition Award, MassDOT:

2012 ACEC Honor Award:

2012 WTS, Boston Chapter, Innovative Transportation Solutions Award:

MULTIMODAL DESIGN

As a supervisor in the MassDOT Traffic Engineering Section, Andy oversaw the design of the construction staging and traffic control plans for all projects in the MassDOT Accelerated Bridge Program in the Charles River Basin. The Charles River Basin connects the cities of Boston and Cambridge, Massachusetts over a series of several bridges and connecting pathways and roadways. This area has some of the highest bicycle, pedestrian, and transit traffic in Massachusetts. Andy is a daily user of the pedestrian, bicycle and transit infrastructure in Boston. His first-hand experiences and observations help inform the details of the designs he uses.

RESEARCH AND EDUCATION

Andy has experience leading and participating in transportation-related research. He served as Chair of the MassDOT Asset Management Steering Committee and reported directly to the Chief Engineering. At KAI, Andy managed a research project with a state DOT investigating state-of-the-practice of transportation asset management, including a national scan of state DOTs. The research identified best practices and recommended modifications to optimize the way their transportation asset management program is delivered. Andy is currently Co-Principal Investigator of NCHRP Synthesis 20-05/Topic 46-02: Roundabout Design, Operations, and Safety Practices. The synthesis conducted a national survey and interviews with state DOTs to capture the state-of-the-practice. Andy has also instructed five one-day workshops through the University of Massachusetts Local Training Assistance Program.

BOSTON GREEN LINKS PLAN, BOSTON, MA

Andy provided engineering design expertise on the first bicycle facility design to come out of the City of Boston's Green Links planning effort. He helped design a two-way separated bike lane between the Ruggles MBTA station and the Back Bay Fens and the Emerald Necklace through the Northeastern University campus. Andy also led the design for a reconfigured intersection at Huntington Avenue and Parker Street/Forsyth Way, which improves conditions for pedestrians and bicyclists, and helps transition bikes from a two-way separated bike lane to on-street bike lanes.





Conor Semler is a Senior Planner who draws on his experience in urban planning, traffic engineering, and technical research in complete streets design. Conor is highly regarded for his ability to leverage transportation design to create livable and healthy communities. His focus is on improving conditions for walking and bicycling through better evaluation and design. Conor is a national leader in the planning and design of innovative bicycle facilities. He was involved in the development of both the NACTO Urban Bikeway Design Guide and the FHWA Separated Bike Lane Planning and Design Guide. Conor's experience is informed by his role in leading research, contributing to designs, and working closely with cities to continually evolve and innovate safer, more inviting bicycle facilities. He has worked to improve conditions for walking and bicycling with many local transportation agencies, including MassDOT, Somerville, Cambridge, and Boston.

CONOR M SEMLER, AICP

Senior Planner

EDUCATION

MRP City and Regional Planning, Cornell University

BA Government, Colby College

YEARS OF EXPERIENCE

9

LICENSES

AICP

AFFILIATIONS

American Planning Association, Member

Association of Pedestrian and Bicycle Professionals, Board Member

Young Professionals in Transportation - Boston, Former Vice Chair

American Institute of Certified Planners (AICP), Member

PUBLICATIONS

With Coffel, K., et al., TCRP Web-Only Document 44: Literature Review for Providing Access to Public Transportation Stations, TCRP, TRB, NAS, Washington, DC 2009

Paul Ryus and Conor Semler, "Best Practices for Benchmarking Public Transportation," presented at the AITPM National Conference, Brisbane, Australia (July 2010).

Robyn Davies, Stephen Larter, Athol Moore, Conor Semler, and Jerryn Zwart, "Best Buys for Walking and Cycling Workshop," presented at the AITPM National Conference, Brisbane, Australia (July 2010).

Miranda Blogg, Conor Semler, Manu Hingorani, and Rod Troutbeck, "Travel Time and Origin-Destination Data Collection using Bluetooth MAC Address Readers," presented at Australasian Transport Research Forum 2010 Proceedings.

With Coffel, K., et al. TCRP Report 153: Guidelines for

MARYLAND BICYCLE AND PEDESTRIAN MASTER PLAN UPDATE

Conor worked with Maryland DOT to update its Bicycle and Pedestrian Plan to improve conditions for walking and biking across the state. The plan focused on modifying State policies to help fund bicycle and pedestrian infrastructure, eliminate barriers to walking and biking, and introduce flexibility in design to create livable streets. Recognizing MDOT's role in transportation planning in Maryland, the Bicycle and Pedestrian Plan encourages leadership and vision from the top down to each of the modal administrations.

NACTO URBAN BIKEWAY DESIGN GUIDE, NEW YORK

Conor contributed to the NACTO Urban Bikeway Design Guide as a member of the consultant team. He wrote and developed material for the Guide and offered engineering insight into the appropriateness and applicability of the cycling treatments. Bicycle facilities covered by the Guide include a variety of innovative facilities, including bicycle signals, cycle tracks, bike boxes, and intersection improvements. The Guide has two major final products: a web-based version that includes a platform for discussion and information exchange, and a printed summary that will be updated regularly. The National Association of City Transportation Officials and its Cycling for Cities project funded the work which builds on its Emerging Best Practices Sheets. It is anticipated that the dissemination and fine-tuning of this information will help unleash the potential of American cities to reach world-class levels of bicycling.

FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE

Conor worked on the research team that developed the FHWA Separated Bike Lane Planning and Design Guide. Working with the Office of Human Environment's Livability Team, Conor researched best practices in planning and design of separated bike lanes, also known as cycle tracks. The research included a detailed safety and mode share analysis, while highlighting separated bike lane planning and design information. It featured an extensive literature review and case studies and interviews with agencies to learn about the experience of planning, designing, and implementing separated bike lanes in the U.S. Together, the project team contacted every U.S. city that had implemented or was planning to implement separated bike lanes to learn from their



Providing Access to Public Transportation Stations. Transit Cooperative Research Program, Transportation Research Board, National Academy of Sciences, Washington, D.C., 2013.

Thomas, L., Ryus, P., Semler, C., Thirsk, N. J., & Krizek, K. "Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices." No. FHWA-15-051, Washington, D.C., 2015.

Semler, C., Vest, A., Kingsley, K., Mah, S., Kittelson, W., Sundstrom, C., and Brookshire, K. "Guidebook for Developing Pedestrian and Bicycle Performance Measures." FHWA-HEP-16-037, Washington, D.C., 2016. experience. The Design Guide provides a robust and contemporary assessment of crash data for operational separated bike lanes in the US. By evaluating the full range of design options, safety studies, and qualitative input from practitioners, it also informs the planning, design, and safety outcomes of future separated bike lanes.

BOSTON GREEN LINKS PLAN, BOSTON, MA

Conor is leading KAI's work on the Boston Green Links Plan, an initiative of the Boston Transportation Department to better connect the City's residents to its parks. Boston has a wealth of open space, including both large open spaces and miles of linear parks that provide pleasant conditions for walking and bicycling throughout the City. The City hired KAI (as a member of the NBBJ team) to identify the best connections between neighborhoods and parks, with an emphasis on serving families and individuals with a wide range of abilities. KAI's approach identified candidate links with low traffic speed and volume, or with excessive width from which protected facilities could be established. It also identified crossing barriers, such as inhospitable intersections or rail/river crossings. By solving these challenges at spot locations, the Plan will unlock the larger park network for Boston's residents.

FAR NORTHEAST LIVABILITY STUDY, WASHINGTON, DC

Conor was the Pedestrian/Bicycle planner on the Far Northeast Livability Study in Washington, D.C. The study evaluated auto, bicyclist, and pedestrian traffic operations to proactively manage congestion and mitigate potential conflicts between multimodal users of the neighborhood. Conor helped identify, prioritize, and develop concept plans for a range of projects to build a more complete bicycle network, calm neighborhood traffic on collector streets, reduce cut through traffic on local streets, and enhance pedestrian crossing safety at intersections through design and operations. An intensive community engagement led to the creation of a Solutions Toolbox to help residents learn and identify the types of interventions possible and preferable to their priority concerns.

INNOVATIVE BICYCLE FACILITY EVALUATION, WASHINGTON, DC

Conor helped the DC Department of Transportation evaluate several recently-installed innovative bicycle facilities intended to improve cyclist comfort and safety. He analyzed the safety and operations of these facilities for all travel modes using before and after video data, multimodal level of service, and user surveys. These facilities include cycle tracks, bike boxes, bicycle signal heads, and contra-flow bike lanes, and the results of the analysis will be used to refine the existing designs, as well as provide guidance on best practices moving forward.

James E. Fasser, RLA, AICP, LEED AP

Landscape Architect

BACKGROUND

Mr. Fasser is a Senior Landscape Architect and Planner with 32 years of professional experience whose expertise lies in project management, land planning, landscape architecture and urban design. He has extensive experience in federal, state and local project permitting, park planning and design, urban redevelopment, site design, public participation and project implementation. His projects range from solving complex site design issues within constrained urban sites to open space plans for entire communities. With 16 years in the public sector, Mr. Fasser has extensive experience working with diverse groups and project stakeholders across the northeast, and has served on many local boards and commissions.

PROJECT EXPERIENCE

Belmont Center, Belmont, MA

Landscape Oversight managed landscape architecture team by providing oversight and QA/QC for the development of conceptual streetscape master plan including complete photo-realistic model of the downtown core. The project required coordination with Town Planning/Development Offices and Community advisory groups. Tasks associated with this project included Site analysis, digital modeling of existing and proposed conditions, development of estimates, lighting plans, before and after photo sketches, as well as standards for detailing of specialty pavements and furnishings. Project challenges have included traffic and pedestrian conflicts, integration of MBTA station and proposed parallel trail system, a historic railroad bridge, pedestrian tunnel, and dense retail facades.

New Bedford Riverwalk, New Bedford, MA

Project Manager. BSC Group is working with the City of New Bedford to plan and complete initial design plans for a public pathway along a 2.25 mile stretch of the Upper Harbor of the Acushnet River. This new Riverwalk is being developed to reconnect the community with the water and provide a recreational amenity for New Bedford. Key project elements include trail design, environmental restoration, aesthetics, sensitivity to adjacent conditions, safety, universal accessibility and regulatory issues.

Hingham Trails Master Plan, Hingham, MA

Landscape Architect for the preparation of a town-wide master plan to improve trails, trail connectivity and open space preservation in Hingham. The plan evaluated all existing town trails, suggested trail improvements, trails connections and acquisitions to both preserve valuable open space and better link trails. The project involved working with Steering Committee and extensive public outreach.

EDUCATION

B.S., Landscape Architecture University of Virginia

REGISTRATIONS

Registered Landscape Architect – MA, CT, NY

American Institute of Certified Planners

LEED Accredited Professional

AFFILIATIONS

American Society of Landscape Architects

Boston Society of Landscape Architects

American Planning Association, Massachusetts, Economic Development Chair

Urban Land Institute

National Recreation and Park Association

Massachusetts Recreation and Park



James E. Fasser, RLA, AICP, LEED AP

Bicycle and Pedestrian Trail Study, Pittsfield, MA

Project Manager for providing planning, public participation, permitting, and design services for a bike/pedestrian pathway to help -connect key open space resources in the City of Pittsfield. The new bike path segment is an important opportunity to extend the regional Ashuwillticook Rail Trail into the City and provide an attractive recreational opportunity for community residents. The success of the project will offer residents improved health, a recreational resource, a tourist amenity, stronger neighborhoods, increased property values, and an alternative to motorized vehicles.

Blackstone Gateway Park, Greater Worcester Land Trust and the City of Worcester, MA

Project Manager for the preparation of a master plan that explored the feasibility of installing trails through and around a sensitive open space area within Worcester. Optional trail alignments were explored with associated costs. The final master plan included a system of walking trails, bikeways, boardwalk and bridges. Interpretive overlooks and canoe launch areas will be installed along the river. Project required coordination with various City departments, abutters, and an advisory committee.

Assabet River Rail Trail Planning / Design Services, Marlborough, MA

Project Manager for improvements to a recently constructed section of the Assabet River Rail Trail to make the trail more inviting, tie the trail into the surrounding neighborhoods and assist in stimulating economic development on and within the area of the trail. BSC provided an analysis of existing conditions and conducted research related to the trail and a study area that extended out through the neighborhoods and areas surrounding the trail. A series of public forums were held, comprised of six focus groups and two public charrettes, to obtain input from City agencies, abutters, and existing and potential users of the trail. The input received through the public forum process, and information gathered through research and analysis, became the basis for design suggestions for key study areas and recommendations for other areas that could be incorporated as either short- or long-term improvements to the trail and surrounding areas.

East Boston Greenway Connection Feasibility Study

Project Manager for a feasibility study exploring options for connecting the East Boston Greenway and BikeTrail to the Chelsea Creek waterfront and open space facilities within the neighborhood. The project explored various bikeway and pedestrian routes to connect key features while avoiding major intersections and roadways. Project required in-depth coordination with various City agencies and two public workshops.

Chelsea Creek Visioning Process for the Chelsea Creek Action Group

Project Manager responsible for leading a public visioning process to prepare a redevelopment plan for an urban waterfront parcel in Chelsea and East Boston. The process includes a series of public charrettes, initiated with the presentation of numerous successful waterfront development projects.



Casey-Lee Bastien, RLA

Landscape Architect

EDUCATION

B.S., Landscape Architecture University of Massachusetts Amherst

REGISTRATIONS

Landscape Architect – MA

OSHA Construction Safety and Health Certified

BACKGROUND

Mr. Bastien is an RLA Landscape Architect with 15 years of experience in the areas of urban design, and planning. He has extensive experience in feasibility planning, streetscape design, environmental engineering, lighting design and institutional design. His project experience includes all levels of design from public outreach, permitting, budget estimating and digital modeling to construction documentation, bid support, construction oversite, and project management. Other skills include sculptural arts and custom fabrication.

PROJECT EXPERIENCE

Belmont Center Master Plan, Leonard St, Belmont, MA

Landscape Architect for public outreach and the development of conceptual streetscape and park master plan closely followed by execution of built works based upon the resulting design guides. The design process involved digital modeling of the downtown and detailed photo simulations. The project required coordination with Town Planning, Community Development, BMLD, DPW, advisory groups, key business stake holders and selectmen. Tasks associated with this project included research, estimating and lighting design as well as setting standards for detailing of specialty pavements and furnishings. Project challenges have included traffic/ pedestrian conflicts, integration of MBTA station and proposed parallel trail system, lighting of the historic railroad bridge, and coordination of street furnishings with retail facades. Caseylee has been deeply involved in the development and implementation of every aspect of this project from concept to construction currently underway.

Trapelo Road Reconstruction, Belmont, MA

Landscape Architect, responsible for the development of a comprehensive streetscape master plan followed by MassDOT construction process. The streetscape program was developed to guide the design of plantings, furnishings, decorative pavement, trail markers, banners, signage, transit structures, and furnishings. Project tasks have included development of custom subsurface planting techniques for urban street trees under adverse conditions, urban bioremediation, support of stakeholder advisory groups to integrate trees and features along the corridor while preserving access and views to businesses; Caseylee has been deeply involved in the development and implementation of every aspect of this project from Concept to construction.

Pleasant Street Corridor, Belmont, MA

Landscape Architect for two-mile long streetscape renovation project, including two business districts, two residential districts, and a historic district. Improvements include new roadway, sidewalk, sophisticated ground water solutions, and plantings. Landscape issues that were addressed included preservation of existing specimen trees, strategic siting of new street trees, the coordination of plantings around existing and proposed utilities as well as coordination with the Town Arborist to establish new plantings during the early outbreak of the winter moth infestation.



Casey-Lee Bastien, RLA

Pittsfield Bike and Pedestrian Study, Pittsfield, MA

Landscape Architect for a study to explore feasible routes for a new bike and pedestrian trail link between the existing Ashuwillticook Rail trail north of the city and planned trails in Lenox to the south. Study proposed alternatives for both north and central sections of the route. Services included site reconnaissance and collection of map data identification of possible routes, development of social metrics for several community participation meetings, coordination with an ad-hoc committee, utility companies, budgetary estimating and the production of a final report summarizing the process and identifying the preferred routes.

Assabet River Rail Trail, Marlborough, MA

Production Designer for the planning of improvements and connections to the Assabet River Rail Trail intended to stimulate economic and community development associated with the trail and the surrounding neighborhoods. Tasks associated with this project included direction of charrette focus groups, development of GIS plans, coordination of promotional materials including posters and multi-lingual flyers, interactive presentations, plans and a final report. Mr. Bastien actively participated in a number of public charrettes. He has remained involved with community groups associated with the plan since its inception.

Blackstone Gateway Park, Worcester, MA

Landscape Architect for the development of trails and elevated boardwalks with overlooks and bridges along and over the Blackstone River. Tasks associated with this project included development of gateway gardens, boardwalk and bridge details, ecological restoration planting plans, compensatory flood storage, geotechnical analysis and interpretive signage. Caseylee has been a part of the initial planning and design of this project for many years. He has participated in testing, permitting, property negotiations, budgeting and construction documentation; Construction is anticipated for Fall of 2016.

Concord River Greenway, Lowell, MA

Landscape Architect for the development of an Arts Integrated Greenway and ecological, linear park along the Concord River. The project involved planning design and construction of a multi-phase plan. Caseylee worked collaboratively with a team of Artists Planners and Engineers from multiple firms and agencies to bring the project to life. Tasks associated with this project included designed rain gardens, bioswales, and, custom site furnishings using reclaimed site elements. Caseylee collaborated with project artist to incorporate art into site elements such as railings, gates, and bollards to tell the story of the river. He developed construction plans, cost estimates, and specifications and also provided construction oversite for the two completed sections of the park with two additional designed sections awaiting construction funding.

Hingham Community Trails Masterplan. Hingham, MA

Landscape Architect for the development of comprehensive mapping and analysis of existing trail systems and feasibility planning for proposed trail connections. Caseylee prepared maps and analysis diagrams for assessment of options, budget estimating for detailing of trail and deck options, as well as concepts and plans for accessibility enhancements to the first proposed improvement; a connection to the existing Hingham Shipyard Harborwalk which he had previously designed as a public amenity for private developers.



Alexandra M. Echandi

Trails and Funding Coordinator

BACKGROUND

Ms. Echandi is a Wetland/Wildlife Scientist with a unique background combining both the ecological science and law professions. She serves as a specialist on many of the firm's recreational trail planning, design, and construction projects. In this role, she has provided feasibility studies including assessments of invasive species and natural resources, provided recommendations for environmental impact mitigation, led public participation processes to garner community input, secured necessary permits for construction, and provided oversight during construction of planned improvements.

Ms. Echandi's prior work history includes six years of experience working for the Department of Conservation and Recreation (DCR) as a Natural Resources Specialist in charge of Trail Operations and Development. In this role at DCR, she had many responsibilities including the development of property-wide management plans for the protection of rare and endangered species and recreational enhancement, and permitting under the Wetlands Protection Act, the Massachusetts Endangered Species Act, and the Massachusetts Environmental Protection Act. She has also provided education opportunities for staff and colleagues to ensure compliance with existing laws, rules, and regulations, and she has provided feedback to DCR regarding revisions to public policy and procedures, as well as best management practices. Her increased involvement in recreation, cultural and natural resource planning, implementation and community outreach skills, and her working knowledge of state policies and regulations allow her to provide natural resources assessments, environmental impact analysis, permitting and regulatory compliance for public, private, and utility clients.

PROJECT EXPERIENCE

Comprehensive Trails Plan, Town of Hingham Hingham, MA

Project Manager for the preparation of a town-wide trails master plan considering existing and future recreational trails in the community. Key issues included public participation and input, town connectivity and accessibility, natural resources protection, and planning for future open space acquisition. Plan preparation involved an extensive amount of public participation, site inventory of existing open space, recreation, and natural resources, and work with local advisory committees.

Blackstone Gateway Park, Greater Worcester Land Trust, and the City of Worcester, MA

Trail Specialist and Ecological Scientist in support of a master plan that explored the feasibility of installing trails through and around a sensitive open space area in Worcester. Optional trail alignments were explored with associated costs. The final master plan included a system of walking trails, bikeways, a boardwalk, and bridges. Interpretive overlooks and canoe launch areas will be installed along the river. The

EDUCATION

J.D. Northeastern University School of Law

B.S. Science, Natural Resources Management Cornell University



Alexandra M. Echandi

project required coordination with various City departments, abutters, and an advisory committee. BSC helped the City obtain grant funds for full project design. Ms. Echandi assisted with securing necessary permits and provided overall design review. BSC is currently working on final construction documents and permitting to allow the city to construct the planned improvements.

New Bedford Riverwalk, New Bedford, MA

Trail Specialist and Ecological Scientist assisting in the design for a new accessible pedestrian walkway and riverbank restoration opportunities along the Acushnet River. Also provided an assessment of permitting needs based on community desires and needs for access along the River.

Salisbury Beach Accessibility Improvements, Salisbury, MA

Project Manager for the design, permitting and implementation of two accessible boardwalks and an accessible picnic site at Salisbury Beach Reservation. In addition to designing both boardwalks and the picnic area, Ms. Echandi secured the environmental permits necessary to complete the project. Once approved, Ms. Echandi assisted in acquiring funding, materials and a work crew. Ms. Echandi oversaw the work crews and provided hands on assistance throughout the duration of the project.

Endangered Species Habitat Enhancement and Protection Along the New England Trail, Hadley, MA

Project Manager, provided technical expertise in the design, permitting and construction of a trail reroute along the New England Trail in an effort to protect endangered species habitat. Working with a team of endangered species experts, Ms. Echandi prepared a conceptual design for habitat enhancement along the now closed portions of the New England Trail. In addition, Ms. Echandi secured the environmental permits and work crew and provided supervision and hands on assistance throughout the duration of the project.

Mile a Minute Biocontrol Project, Canton and Falmouth, MA

Project Manager, secured and managed an APHIS PPQ grant for the introduction on biocontrol weevils for the control of Mile a Minute in Massachusetts. With the support of the Massachusetts Department of Agriculture, Ms. Echandi assessed the extent of mile a minute infestation in several properties and selected two of those properties as the initial biocontrol sites. Ms. Echandi engaged in a public education campaign comprised of public presentations and mailings specifically related to mile a minute vine.

Friends of the Blue Hills Stewardship and Volunteer Activities and Adopt a Trail Program, Blue Hills Reservation, Quincy, Boston, Milton, Canton and Randolph, MA

DCR Program Coordinator, reviewed and permitted all Friends of the Blue Hills activities in the Blue Hills Reservation. Also provided environmental compliance training prior to project initiation, project oversight and feedback upon project completion. Permitting included reviews by the Massachusetts' Historic Commission, DCR's Office of Cultural Resources, Natural Heritage and Endangered Species Program, Local Conservation Commissions and DEP.



Sean Ewald, PLS Right of Way and Survey

EDUCATION

B.S., Civil Engineering, 2000 University of Houston

REGISTRATIONS

Professional Land Surveyor in MA #47143

AFFILIATIONS

Massachusetts Association of Land Surveyors and Civil Engineers (MALSCE)

CERTIFICATES

10-hour OSHA Construction Site Safety Certified # 1072197

BACKGROUND

Mr. Ewald is a professional land surveyor with extensive experience in providing such services throughout Massachusetts. He has extensive experience in boundary surveying, including deed research, property line calculations, and legal issues. He has knowledge of construction surveying techniques through his land development experience, and served as party chief for several years before becoming survey manager. His office experience shows an intimate understanding of current survey technology and software. He has been instrumental in the development of CAD standardization and has produced significant gains in productivity through automation.

PROJECT EXPERIENCE

Belmont Street/Trapelo Road, Belmont, MA

Lead Surveyor managed the survey of more than two miles of right-of-way through the Town of Belmont for BSC's design of MassDOT-funded roadway improvements. In support of developing existing conditions plans for the redesign of the roadway, responsibilities included overseeing multiple field crews and office staff to generate ROW lines, utility information, topography and detail. Full-service survey support was provided from pre-design through final construction.

MBTA On-Call Surveying and Engineering, Boston, MA

Land Surveyor for the completion of property line survey at Auburndale Commuter Rail Station as part of BSC Group's on-call survey engineering contract for the MBTA. Assignment involved boundary research and calculations to determine property lines as part of the MBTA's design of accessibility improvements for the station.

Massachusetts Department of Transportation, Districts 3, 4 & 6, MA

Project Manager for on-call engineering field survey support throughout central and northeastern Massachusetts. The project includes up to four full time field crews along with associated office support to enable the efficient construction of various state highway projects. Notable projects include survey services to support the replacement of the University Avenue Bridge and associated approaches, including all bridge layout and control work.

Massachusetts Department of Transportation, Districts 4 & 5, MA

Project Manager for on-call baseplan preparation services throughout southeastern Massachusetts. The work includes continuous field and office activities for a variety of task assignments, including existing conditions of dense city streets to right-of-way determination for state highway layouts. The contract also entailed the inventory of all handicapped ramps located within state highway layouts through the use of a specialized table application.



Sean Ewald, PLS

MassDOT Maintenance Facility, Bedford, MA

Lead Surveyor, for a broad range of surveying services to support the development of a potential MassDOT maintenance facility on Route 62 (Burlington Rd). Services began with an existing conditions survey of the proposed location within the Route 3 onramp, including a utility survey of the abutting portion of Route 62. A separate project phase included the preparation of a state highway alteration plan to aid in the disposal of the property upon which the existing maintenance depot sits. This location had been surveyed by BSC in the past and the existing date was brought up to current MassDOT specifications. Additional monumentation was located and the alteration plan was prepared and submitted to MassDOT's Layout Section.

University of Massachusetts Lowell, Lowell MA

Lead Surveyor for existing conditions plans were generated to support the design and construction of the 550-space North Garage. Utility and records research proved to be a challenging project aspect as the records did not match well with ground conditions.

Town of Lexington, (Hayden, Spring/Concord Streets), Lexington, MA

Lead Surveyor for preparing engineering base plans suitable for the preparation of contract documents for public bidding of a new traffic signal installation at the intersection of Concord Ave and Spring Street, and the construction of a continuous sidewalk along Hayden Ave. The project involves reviewing available plans and defining survey needs, performing field topographical survey of Hayden Ave and the intersection of Spring Street and Concord Ave and preparing digital terrain model and cross sections of existing topography.

City of Chelsea, Washington Avenue, Chelsea, MA

Lead Surveyor oversaw the survey of approximately one mile of urban streetscape through the City of Chelsea. Challenging aspects including the depiction of underground utility systems without adequate record plans and the survey of the urban street without traffic disruption. Right-of-way lines in the area also had to be created from abutting deeds and record plans as no record right-of-way plans were located for the ancient roadway.

Lovejoy Wharf Development, Boston, MA

Lead Surveyor for the preparation of layout alteration plans for the establishment of public right-of-way to service s new development. Challenging project aspects included the incorporation of historic Central Artery / Tunnel data to complement on-the-ground survey for items that could no longer be directly located.





Angela J. Vincent

Public Outreach

EDUCATION

M.S., Resource Management & Administration Antioch University New England

B.S., Environmental Policy & Administration Western Washington University

AFFILIATIONS

American Planning Association

American Planning Association -Massachusetts Chapter

Massachusetts Association of Planning Directors



BACKGROUND

Ms. Vincent is a Senior Resiliency Planner responsible for supporting BSC's growing Planning Group and leading the firm's initiative to expand climate change resiliency principles on our projects. Ms. Vincent has more than 15 years of experience providing a wide-range of planning services, including vulnerability assessments, climate mitigation and adaptation planning, land use planning and hazard mitigation planning to clients within the local, regional, and private sectors. Ms. Vincent brings extensive expertise in the area of sustainability and climate change resilience, having managed one of the first sustainability comprehensive plans in Massachusetts, the Greenfield Sustainable Comprehensive Plan.

Ms. Vincent is involved in numerous statewide planning efforts. She is on the Executive Committee for the Massachusetts Association of Planning Directors, has served as a board member of the American Planning Association (APA), and was the Chair for the 2015 APA Northeast Planning Conference. In her volunteer time, she is the Coordinator of the Lowell Green Restaurant Program, third-party certification program that identifies, certifies, supports and promotes green, sustainable restaurants in the City of Lowell, MA.

PROJECT EXPERIENCE

Greenfield Comprehensive Sustainable Master Plan, Greenfield, MA

Project Manager while at another firm, worked to develop one of the first sustainability comprehensive plans in Massachusetts. She worked collaboratively with the City of Greenfield, including a 36-member Master Plan Advisory Committee, to develop goals and strategies that will help guide development over the next 20 years. In addition to overseeing a team of 8 people, Angela's role included: facilitation of Advisory Committee meetings, creation of collaborative engagement tools, management of innovative outreach techniques (including the use of MindMixer/My Sidewalk), development of community workshops, and creation of a sustainable, implementation structure for the final plan and beyond.

Climate Smart Communities, Hudson Valley, New York

Senior Sustainability Manager while at another firm, coordinated the design and delivery of technical assistance to over 65 local governments who have signed the Climate Smart Communities Pledge for the Climate Smart Communities Regional Coordinator Pilot Project for the Mid-Hudson Region and the Capital District in New York State. To do this, she managed an internal consulting team, external sub-consultants and partners to advance local climate and sustainability programs through direct assistance including: completing greenhouse gas (GHG) emissions inventories and tools; conducting vulnerability assessments; developing climate action and sustainability plans; implementing
Angela Vincent

GHG emissions reduction and other sustainability measures; identifying funding opportunities; and reporting and tracking of sustainability metrics.

Vulnerability Assessment Training, Westchester/Rockland Counties, NY Senior Sustainability Manager while at another firm, developed and delivered a training on how to conduct a vulnerability assessment for two communities in Westchester and Rockland Counties. The training included local elected officials and staff members that are essential to identifying solutions to some of the climate change impacts that are predicted for both counties including: heat waves, flooding, erosion, and droughts. Angela facilitated discussions with the stakeholders about the key vulnerabilities in the two communities and how they can begin identifying strategies to reduce them.

Capital Regional Sustainability Plan, Greater New York, NY

Senior Sustainability Manager while at a previous firm, assisted in developing the Capital Region Sustainability Plan through the New York State Cleaner Greener Communities program. In addition to managing the various tasks associated with this program, I worked directly with the Food Systems Technical Committee to identify goals, strategies, and sustainability indicators for this focus area, which are included as a chapter of the Regional Sustainability Plan. She also supported the community engagement component of the regional sustainability planning process, using CrowdBrite.

Planning and Conservation Commission Support, City of Nashua, NH

Staff Planner while at a previous firm, served as primary technical staff person to the Nashua Conservation Commission (NCC) which included: reviewing dredge and fill permit applications, working with developers on alternative solutions, preparing recommenda-tions to the NCC, managing consultant work for the NCC and updating the Nashua Wetlands Ordinance. Provided staff support to the Livable Walkable Communities Committee including developing agendas and supporting various projects the Committee.



Team Firms Selected to Develop Feasibility Study

BSC Group - Founded 1965

- Prime Consultant for Feasibility Study
- Serving Belmont since 1995
- Employee Owned Engineering Firm
- Locally Headquartered in Boston
- 120 Employees in MA

Client Base: MA Municipalities

State Agencies: MassDOT, MBTA, DCR, MassPort, and MassDevelopment

Kittelson & Associates, Inc., (KAI) – Founded 1985

- Subconsultant for Bicycle Pathways/Planning
- National leader in multimodal system planning and evaluation
- Local Boston MA office includes previous MassDOT staff

Client Base: MA Municipalities, regional planning groups, state and federal agencies

Hatch Mott MacDonald (HMM)

- Subconsultant for Rail, Tunnel, and Cost Estimating
- Worldwide reputation in tunnel design
- 75-year old North American consulting engineering firm
- Massachusetts office for 25 years
- Westwood MA staff of 110 employees
- W Springfield staff of 100+

BSC GROUP

Client Base: MA Municipalities State Agencies: MassDOT, MBTA, DCR, MWRA, and MassPort

Team Firms Have Strong Connections

BSC Group has assembled an impressive team of industry leaders in the professional fields defined in the Town of Belmont's RFP. Our team meets the goal of providing expertise in the varied transportation interdisciplinary areas, prequalification with MassDOT, and key experience in collaborating with each other, as well as in serving the transportation industry. Following is an introduction to our team firms, including the roles they will fill on Belmont's Feasibility Study.

- BSC Group will serve as the prime consultant for the Town of Belmont. Founded in 1965, BSC is headquartered in Boston and offers interdisciplinary consulting services in the fields of civil engineering, transportation engineering/planning, structural engineering, land surveying, landscape architecture, and environmental permitting/science. BSC Group currently serves the Town of Belmont on the Trapelo Road project. As the prime consultant for this feasibility study, BSC Group will provide overall team management, project management, civil engineering, transportation engineering, structural engineering, landscape architecture, public outreach, funding assistance, and land surveying services.
- Kittelson & Associates (KAI) provides comprehensive transportation engineering, planning, and research services including expertise related to multimodal system planning and evaluation to communities like Belmont. KAI works closely with lead transportation and planning agencies and local communities to promote healthy, sustainable societies develop efficient, active, and safe multimodal transportation that is costeffective to manage, operate, enhance, and use over time. KAI currently works with the City of Boston on the Boston Green Links Plan identifying optimal connections between neighborhoods and parks.
- Hatch Mott MacDonald will enhance our team with two engineers with extensive experience in complex rail transit, railroad, and tunnels, as well as coordination with the MBTA and/or other rail parties. HMM will also provide cost estimating for the tunnel component of this feasibility study. HMM combines a national reputation for quality tunnel analysis and design with exceptional local staff resources to support this effort. Notably, HMM has also worked on an ever-increasing number of projects, large and small, for the local Massachusetts state agencies, including MBTA, MassDOT, Massachusetts Water Resource Authority (MWRA), Boston Water and Sewer Commission (BWSC), and the Department of Conservation and Recreation (DCR).

Importantly, the basis of our team composition is not only shaped on the project components that call for expertise in a broad range of transportation technical areas but on BSC's relationship with these two firms that will enhance our ability to respond to you. We recognize the importance of solid relationships among team members and how expectations and confidence in one another contribute to overall performance.



BSC's design for a continuous greenway trail in Milton and Boston, MA entailed the conversion of a strip of land into a dedicated bicycle lane, separate from motorized vehicular traffic.



BSC's master plan for Blackstone Gateway Park in Worcester incorporates more than 4,000 linear feet of trails and boardwalks.

BSC Group and KAI's relationship is strengthened on the fact that we are currently working together on two BSC-led projects. The first, a Department of Conservation and Recreation traffic study and conceptual design for intersection improvements at Fellsway East and Highland Avenue in Malden, and the second, a rotary design project for the Town of Hudson. We teamed on these projects with BSC Group as the prime consultant based on the personal relationship between BSC principal-in-charge Tom Loughlin, PE and KAI Senior Engineering Associate, Andy Paul. Both individuals worked closely during their long-term tenure at MassDOT, and together they have an in-depth understanding of coordinating with our state transportation agencies, including getting projects through the TIP process in Massachusetts.

BSC Group and HMM's relationship is also built on a long-standing personal relationship as a former BSC structural engineer is now part of the local HMM organization. Our two firms are actively looking to team with one another when our combined resources maximize results for our clients. We have worked successfully with one another on a per project basis, side by side, on several transportation and energy projects where the contractual relationship is not with one another but directly for the client.

Putting Our Experience to Work for Belmont

BSC is eager to put our team's combined experience to work for the Town of Belmont on this important project. Not only do we offer significant understanding of the community area, our team brings expertise in each of the discipline areas required to conduct a comprehensive feasibility study. BSC, proposed prime consultant for this effort, has worked with the Town of Belmont over a 20-year period providing transportation engineering services on several noteworthy projects:

- Belmont Center Traffic Study
- Pleasant Street Reconstruction
- McLean Hospital Redevelopment, Plan Review
- Belmont Street and Trapelo Road Reconstruction
- Belmont Center Transportation Improvements
- Concord Avenue Bicycle Lanes
- Review of Clark Street Bridge

Many of these projects either intersect or connect in some way to the proposed segments under consideration. For example, on the Belmont Center Transportation Improvements, we included the connection of the potential Community Path alignment on the railroad embankment (Segment 3N) to the pedestrian tunnel under the railroad embankment (Segment 3Ns) and





Before



After

BSC generated concensus among key stakeholders in the City of Pittsfield for its Bicycle and Pedestrian Trail Study using clear visual materials to support the visioning process. the shortening of the tunnel. This plan was developed to the 75% stage, and is available for consideration and further input from the Town, the MBTA, and BSC proposed subconsultant and tunnel expert, HMM.

Municipal Expertise

BSC has had the pleasure of working with numerous Massachusetts municipalities as they plan and design recreation areas for their communities. We are enthusiastic about the opportunity to apply this expertise in the Town of Belmont to help enhance its existing pathway network, design a new segment, and create an attractive, useful linkage within your community.

In response to the tasks established in the Town's Request for Proposals, we are pleased to offer an overview of our qualifications in key project areas including:

- Planning and design of recreational pathways
- Responsive and productive public engagement processes
- Identifying and accessing grant funding for implementation phases

Additionally, we offer examples of similar projects we have completed, as well as references that the Town of Belmont may contact to learn more about our background in responsive planning and design for public pathways.

Planning and Design of Recreational Pathways

BSC Group and our key project personnel have worked on numerous recreational pathway projects, both as stand-alone projects and as components of larger community revitalization and recreation enhancement efforts, involving parks, schools, downtown districts, open spaces, and roadways. For all of these projects, we have combined practical pathway design with aestheticallypleasing landscapes to construct attractive yet functional settings for recreation. Through consideration of such factors as user needs, ease of maintenance, and safety, our team identifies active and passive recreation solutions that are environmentally sensitive, aesthetically pleasing, cost effective, and sustainable. Our experience in the actual design process will provide an important foundation for the planning of pathways and linkages for the Town of Belmont. In the following paragraphs, we present our team's qualifications and experience in key areas we believe to be critical to the success of the planning process. These include the following:

- Pedestrian Accessibility
- Accommodating Multiple User Needs
- Experience Coordinating with MA Agencies
- Cost Estimating as Part of the Feasibility Study Process
- Assessing Complex Issues such as Tunnels and Track Crossings





BSC conducted the environmental permitting tasks for the restoration of the former Canton Airport and creation of the Massachusetts Department of Conservation and Recreation's newest public path. Restoration required excavation of PCVs from several acres of wetlands in the Neponset River Flood Plain.

Pedestrian Accessibility

Virtually every project designed by our proposed team includes meeting requirements for handicapped accessibility and complies with the Americans with Disabilities Act (ADA) standards. Members of our proposed team are experienced in designing trails and pedestrian walkways, sidewalks, and ADA-compliant ramps to enhance safety and encourage pedestrian use of public areas. For example, on behalf of the Connecticut DPW's Silver Sands boardwalk project, BSC's design incorporates modular boardwalk extensions providing handicap access from the boardwalk to the water. And, for the award winning Oyster Shell Park project, also in Connecticut, BSC staff have designed ADA-compliant pedestrian walkways following the completion of the master plan.

Accommodating Multiple User Needs

Public recreational facilities like the Town of Belmont's trail network often must accommodate multiple users. BSC-designed recreational facilities offer a full range of services for a population of all ages, interests, and abilities. For example, for Blackstone Gateway Park in Worcester, BSC developed a master plan and design for a passive recreational, urban park with a network of trails and boardwalks to support hiking, biking, and nature education activities. The park offers public access to both passive and active users through a series of entry parks that connect to over 4,000 linear feet of pathways and boardwalks.

We understand that today's community pathways serve more than a typical bicycling enthusiast and is a connected network for exercise, recreation, and even mass transportation.

Experience Working with MA Agencies: DCR

BSC has a strong record of performance in coordinating with MA state agencies on transportation projects. As shown in the project descriptions at the end of this section, BSC provided the transportation/civil engineering design services for three segments along the DCR Greenway in Boston and Milton. We provided input to the master plan during 2007, and began providing design services in 2008 for construction completion of the first segment in 2010. Since then we've designed the second and third segments, the third of which is currently in construction between the current trail loose ends in Milton and Mattapan.

BSC is currently working with DCR and team member KAI on the Malden intersection previously mentioned and most recently worked with the agency providing environmental permitting for the restoration of the former Canton Airport and creation of the Massachusetts Department of Conservation and Recreation's newest public path. At the Canton Airport, the restoration



BSC's principal-incharge, Thomas Loughlin completed successful funding documents for the Massachusetts Avenue Roadway Improvement project that was ranked as one of the top projects in MAPC's evaluation criteria. resulting in the project being funded in the 2016 fiscal year.

required excavation of PCVs from several acres of wetlands in the Neponset River Flood Plain. The park opened in July, 2014 and won a Merit Award from the Boston Society of Landscape Architects in 2011.

Experience Working with MA Agencies: MBTA

Several members of our proposed team have worked with both private rail owners as well as representatives of the Massachusetts Bay Transportation Authority (MBTA) and MassDOT. In fact team member, HMM is providing extensive work on behalf of the MBTA with major involvement on the Red Line/Orange Line (RL/OL) Infrastructure Improvements Program, and the Green line extension.

BSC Group recently received a "direct select" contract assignment from the MBTA to inventory all of their bus stop locations and our selection as a team member to inventory all their rail and transit locations. (maybe something like: MBTA has also selected BSC as a team member for creating an inventory of all their rail and transit locations.) (In addition,) As information, BSC has an on-call contract with the MBTA to provide engineering and land survey services. We are currently working with the MBTA under a MassDOT task assignment providing inspection of 15 pedestrian bridges, all of which are over active rail lines. Proposed senior transportation engineer Peter Reed, PE serves as BSC's project manager on this effort and is well familiar with the safety requirements around an active track.

Experience Working with MA Agencies: MassDOT

BSC Group currently serves MassDOT in a number of professional disciplines from complex permitting to design of emergency and maintenance repairs to system-wide bridges to stormwater consulting services as part of MassDOT's Statewide Impaired Waters Program. This work is primarily performed under statewide, on-call contracts that also involves the development of strategy, design services, coordination with other agencies such as the MBTA as well as the Commonwealth's municipalities. BSC's experience with MassDOT is threaded through each level of our team organization in that some team members have led literally dozens of MassDOT project assignments while others have of course worked on fewer projects depending on their career stage.

Importantly, BSC understands the MassDOT process. Tom Loughlin, a former MassDOT Highway Division Director of Operations, knows how to deliver a project for MassDOT review including the key elements MassDOT engineers need. Tom's familiarity with MassDOT will be complemented by Andy Paul's MassDOT experience earned while serving in the Traffic Engineering Group.

BSC's principal-in-charge, Thomas Loughlin, has extensive experience in preparing MassDOT's Project Need Form (PNF), Project Initiation Form (PIF), and completing the MAPC project evaluation form. As an example, Tom





BSC regularly leads public outreach programs and key stakeholder meetings to gain concensus for projects. Essential to our approach is an open and responsive process that guides the community in making practical choices that can be funded and built.

worked directly with the Town of Lexington to complete all three of these documents which enabled the Massachusetts Avenue Roadway improvement project to be ranked as one of the top projects in MAPC's evaluation criteria, resulting in the project being funded in the 2016 fiscal year.

Lastly, project manager Bill Paille has managed several rails-to-trails and community path projects where he was responsible for the analysis and design work with MassDOT review, approval, and then construction.

Cost Estimating As Part of the Feasibility Study Process

The development of accurate cost estimates is a critical service that BSC provides to our clients. Accurate estimates are important to ensuring that the project's design is in-line with available funding. BSC tailors the construction cost estimating process to meet the needs of each project, and estimates ranges from order-of-magnitude costs for early stage planning studies to detailed line-item costs. BSC prepares cost estimates based on the material types and quantities included at each stage of the design. BSC uses the Unit Quantity Method for developing cost estimates, whereas the project is divided into the various individual operations or items that collectively "build" the finished product. Because a large percentage of our projects go through a public bidding process, we use real construction cost data from comparative Massachusetts projects as a benchmark when estimating costs.

Assessing Complex Issues such as Tunnels and Track Crossings

HMM will lead the tunnel analysis component of this feasibility study and offers their expertise to the team in this discipline. All tunneling is special in nature, and tunneling under an active rail track is a particularly specialty. The risks associated with this work need to be very carefully evaluated, so that the selected tunneling method that is taken through final design and construction provides the most carefully considered balance between cost and risk. It is essential that full consideration be given to all costs that are associated with the tunnel installation so that an overall comparison can be made between the different alternatives. These costs include, not only those of the construction of the tunnel itself, but also any associated activities, such as third party approvals, protection of adjacent structures, ongoing maintenance and other structures that have a layout directly affected by the tunnel layout.

Responsive and Productive Public Engagement

BSC Group is committed to working with the Town of Belmont and key project stakeholders to assure that our planning efforts meet the goals of the community for the long term. Our team members are comfortable and experienced in conducting these types of concensus building meetings, and our success stems from our emphasis on stakeholder input and commitment, clear visual materials to support the visioning process, and skilled explanations of technical concepts to a wide audience.



BSC's Team includes professionals skilled in developing easyto-understand graphics for both project understanding and final project development. These often range from creative, informative graphics to wayfinding signage.



As part of BSC's regulatory responsibilities for the permitting of a bridge reconstruction on Martha's Vineyard, BSC prepared educational signage regarding eelgrass and coastal ecology.

We use both formal and informal meeting methods, as appropriate, to maximize input from participants. For example, BSC led the public participation process for the City of Pittsfield's bikeway and pedestrian study, which entailed leading several public meetings as well as working closely with an *ad hoc* advisory committee assembled by the City of Pittsfield. The ad hoc committee helped BSC identify key individuals and groups to invite to public meetings, promote these meetings which included planning charettes, and analyze the input received from the public. BSC used the public meeting process to seek input on various alignment scenarios, as well as present an analysis of the alignment options, discuss the pros and cons of each, and ultimately determine a preferred alignment.

Experience Administering Grant Funding for Municipal Recreation Area Improvement Programs

BSC's approach to park planning process places critical emphasis on assuring that planned improvements can be funded and built. To that end, we regularly assist our clients in the identification and application for grant funds from public and private sources.

The BSC Group staff who will be assigned to the Belmont Feasibility Study project regularly work with municipalities to implement projects that have been funded by state and quasi-state agencies, such as regional planning authorities. Representative programs we have worked with include:



BSC-staff have contributed largely to Commonwealth funding applications; we understand the process for all of the transportation related programs including MassWorks Grants, as well as the 2015 Massachusetts Community Compact Initiative.

- Community Development Block Grants
- Community Preservation Funds
- State PARC Grants
- MassWorks Grants
- Federal EDA Grants
- Urban Park and Recovery Program
- Land and Water Conservation Fund
- Historic Landscape Preservation Program
- MAP 21 Moving Ahead for Progress in the 21st Century
- Urban Rivers Program

If desired by the Town, BSC can recommend additional fundraising techniques, including the solicitation of *pro bono* services from local companies and the sponsorship of signs, bricks, benches, etc. BSC has successfully employed this technique in several communities. In these times of limited public funds, these options can be explored to assure that planned improvements can be funded and implemented.

References Attest to Past Performance

BSC Group is pleased to provide the following references for our work on similar projects. Of particular note, many of BSC's references are from repeat clients, a testament to our ability to meet and exceed client needs and expectations, resulting in a long-term relationship on multiple projects. We urge the Town of Belmont to contact these current and former clients to learn more about our track record of quality design, timely project delivery, and cost-effective solutions.

1. Stella Lensing, Bureau of Planning, Design & Resource Protection

Department of Conservation and Recreation

stella.lensing@state.ma.us 617-626-1387

Project: Neponset Greenway Civil and Traffic Engineer Design of Segments 1, 2, and 3 and input to Master Plan Assessment

2. Mary Savage-Dunham, Director of Community Planning

Town of Hingham

Department of Planning dunhamm@hingham-ma.gov 781-741-1419

Project: Town-Wide Comprehensive Trails Plan (now moving to design)



BSC would be pleased to provide additional client references for any project of interest presented on the following pages.

3. Deanna L. Ruffer (formerly with the City of Pittsfield), Community Development Director

Town of Chatham Community Development Department

druffer@chatham-ma.gov 508-945-5168 x475 774-212-1554 (cell)

Project: Pittsfield Bike Path Feasibility Study, Downtown Streetscape Program, Pittsfield, MA

BSC Group is pleased to offer client references for project manager, Bill Paille, PE who has managed community pathway projects prior to joining BSC Group.

4. Michael Langford, Chair Community Pathway Committee

Town of Wareham, Citizen Representative BikePath@wareham.ma.us 508-291-3100

Project: Bike Path Feasibility Study (performed by PM, Bill Paille), Town of Wareham

5. Reno DeLuzio, Chairman

Town of Milford Milford Upper Charles Trail Committee

renodeluzio@comcast.net

Project: Upper Charles Trail, Phase I and II (performed by PM, Bill Paille), Town of Milford

Past Projects Demonstrate Our Qualifications

Concluding this section of our proposal are detailed descriptions of our key projects to demonstrate the team's experience for the Town of Belmont's Community Path Feasibility Study.



NEPONSET RIVER GREENWAY Mattapan SQ to Martini Shell Boston and Milton, Ma

Client/Owner

Massachusetts Department of Conservation and Recreation

Services Provided

- Civil/Site Engineering
- Environmental Permitting
- Traffic Engineering







Project Overview. The Neponset River Reservation Master Plan entails a continuous greenway trail connecting to the Lower Neponset River Estuary Area of Critical Environmental Concern. BSC provided ecological science support, permitting strategy, and environmental permitting and planning services during the Phase I Planning, as well as civil/site engineering, traffic engineering, and environmental permitting for the project's design phase. The completed trail will eventually run from Paul's Bridge on the Neponset Valley Parkway to Morrissey Boulevard, both in Boston and in Milton.

Civil/Site Engineering. BSC Group provided design and construction administration services for a section of the trail that began at Mattapan Square on the Boston/Milton line and proceeded southwesterly along the edge of Truman Parkway, terminating at Moynihan Playground and the Martini Shell. The trail is 8-foot wide, paved trail along the Neponset River. Careful design was required to protect and save as many of the trees located along the edge of road as possible. In three locations, the trail diverges from the edge of roadway and passes through open fields. In other locations, retaining walls were required where the existing embankment is steep. A wood guard rail has been placed between the edge of road and the trail in the areas of retaining walls. An infiltration trench was constructed adjacent to the trail to collect the runoff from the trail prior to draining into the roadway. New catch basins were required due to the relocation of the curb line.

Traffic Engineering for Bicycle Lane. The outer shoulder of Truman Parkway westbound was reduced in width and converted into a dedicated bicycle lane. The greenway trail was located parallel to, and five feet from, the relocated curb.



NEPONSET RIVER GREENWAY Martini Shell to neponset valley parkway Boston and Milton, Ma

Client/Owner

Massachusetts Department of Conservation and Recreation

Services Provided

- Civil/Site Engineering
- Environmental Permitting
- Traffic Engineering







Project Overview. The Neponset River Reservation Master Plan entails a continuous greenway trail connecting to the Lower Neponset River Estuary Area of Critical Environmental Concern. BSC provided ecological science support, permitting strategy, and environmental permitting and planning services during the Phase I Planning, as well as civil/site engineering, traffic engineering, and environmental permitting for the project's design phase. The completed trail will eventually run from Paul's Bridge on the Neponset Valley Parkway to Morrissey Boulevard, both in Boston and in Milton.

Civil/Site Engineering. BSC Group provided design and construction administration services for a section of the trail that began at the Martini Shell and proceeds southerly to terminate at the Neponset Valley Parkway. The trail is an 8-foot wide, paved trail along the Neponset River. The trail crosses over the Neponset River on an existing stone arch bridge that was modified to accommodate the trail. An attractive railing was added on top of the existing bridge parapet to provide appropriate protection for the bicyclists. A wood guard rail has been placed between the edge of road and the trail over the bridge. An infiltration trench was constructed adjacent to the trail to collect the runoff from the trail prior to draining into the roadway. New catch basins were required due to the relocation of the curb line.

Traffic Engineering for Bicycle Lane. The outer shoulder of Truman Parkway westbound was reduced in width and converted into a dedicated bicycle lane. The greenway trail was located parallel to, and five feet from, the relocated curb.



NEPONSET RIVER GREENWAY Central avenue to mattapan SQ Boston and Milton, Ma

Client/Owner

Massachusetts Department of Conservation and Recreation

Services Provided

- Civil/Site Engineering
- Traffic Engineering







Project Overview. The Neponset River Reservation Master Plan entails a continuous greenway trail connecting to the Lower Neponset River Estuary Area of Critical Environmental Concern. BSC provided ecological science support, permitting strategy, and environmental permitting and planning services during the Phase I Planning, as well as civil/site engineering, traffic engineering, and environmental permitting for the project's design phase. The completed trail will eventually run from Paul's Bridge on the Neponset Valley Parkway to Morrissey Boulevard, both in Boston and in Milton.

Civil/Site Engineering. BSC Group provided design and construction administration services for a section of the trail that begins at Central Avenue in Milton and terminates at Mattapan Square on the Boston/Milton line. The trail is a 10-foot wide, paved trail that follows the Neponset River through existing woods. Careful design was required to protect and save as many of the trees located along the edge of trail as possible. The eastern end of the trail begins at Central Avenue and runs westward for 3,500 feet, between the Neponset River to the north and the MBTA Red Line Trolley to the south. The trail then turns northward and crosses the river on a single span 200 foot long bridge and crosses from Milton into Boston. The trail continues westward, through an existing wooded area for 2,000 feet where it rises up to cross over the MBTA Red Line tracks on a bridge referred to as The Canopy Walk. This structure is 1,000 feet in length, maintaining accessible grades on both sides of the tracks. The trail follows the river westward and terminates at Mattapan Square. The final 250 feet are on a wooden board-



NEPONSET RIVER GREENWAY Central avenue to mattapan Sq.



walk perched above a riprap slope of the Neponset River. As were previously constructed sections of trail, an infiltration trench was constructed adjacent to the trail to collect the runoff from the trail prior to draining into the roadway.

Project Coordination. As with each segment of this multi-phase bike path, BSC has closely coordinated with the client, City of Boston officials, Boston Water and Sewer Commission, the public, and all interested parties throughout both design and construction. The third segment also involved coordination with the MBTA to incorporate additional safety measures since the project is adjacent to an active MBTA station. The team also coordinated with a leading architect providing design services for a resting stop at a newly purchased abandoned and rehabilitated structure that will be incorporated into the future use of the trail system.

Traffic Engineering. BSC reviewed the Central Avenue crossing as part of this effort.



TOWN-WIDE COMPREHENSIVE TRAILS PLAN AND DESIGN HINGHAM, MA

Client/Owner

Town of Hingham

Services Provided

- Existing Conditions Assessment
- Trail Planning
- Environmental Stewardship
- Civil Engineering
- Structural Engineering
- Landscape Architecture
- Public Participation









Project Overview. The Town of Hingham is undergoing a series of planning efforts to improve pedestrian and bicycle connections between important open space and community resources, while also protecting the community's natural resources and recreational amenities. As part of its planning efforts, the Town of Hingham retained BSC Group for the completion of a townwide comprehensive trails plan, which includes not only an assessment of existing trails, but also an evaluation for future trail connections between various parks, additional trail networks, and connections to abutting communities. The project involved extensive coordination with the Town Conservation Commission and the Trail Committee.

Trail Data Collection and Assessment. Trail information, including location, condition and structures was recorded in the field by BSC staff. This includes recording invasive plant species findings on a GPS unit and sharing with the town for future consideration. BSC made recommendations regarding trail sustainability, maintenance needs, potential for public education and/or natural resources activities, potential trail connections, parking, and other site amenities.

Trail Design. BSC's contract with the Town was amended to include the design of the first trail connection. This trail segment will connect a water-front trail up a steep slope to an existing trail on conservation land. Design services include landscape architecture, land surveying, and permitting, as well as civil and structural engineering.

Public Participation. BSC was also responsible for assisting the Town at a total of three public meetings and five steering committee meetings. At these meetings, BSC garnered input from key stakeholders; presented analysis of existing conditions; discussed possible measures to ensure trail connectivity, sustainability and public access; as well as addressing open space needs, potential land acquisition, and trail maintenance needs.

ASSABET RIVER RAIL TRAIL BRIDGE Alternatives study Acton, Ma

Client/Owner

Town of Acton Planning Department

Services Provided

- Planning
- Landscape Architecture
- Structural Engineering
- Civil Engineering
- Cost Estimating
- Public Participation



Project Overview. BSC Group has assisted the Town of Acton in analyzing alternatives for the construction of the Assabet River Rail Trail bridge over the MBTA Commuter Rail line in the Main Street (Route 27) area of South Acton. The bridge will improve access to the rail trail from the MBTA Commuter Rail parking lot and local residential neighborhoods and help to achieve the town's goal of creating connectivity between the trail and the community.

Evaluation of Bridge Options. BSC's structural engineers and landscape architects conducted a site visit and evaluated potential options for a new bridge and approaches. Alternatives that were considered include a pre-fabricated bridge and the widening of the existing bridge. Key to the evaluation process was the consideration of ADA accessibility, both on the bridge and along the routes to and from the bridge. Another important project element was the selection of bridge options that preserve the community's historic character. This was accomplished through a study of historic photos, which served as the basis for the suggestion of structures that meet the community's aesthetic goals.

Public Participation. BSC contributed to the public participation process by working with a resident Advisory Committee and attending public meetings, where options were presented to the community and Selectmen. BSC prepared a series of "before and after" photographs showing potential alternatives to help residents visualize proposed improvements and select a preferred option.

MassDOT Coordination. Throughout the process, BSC's team worked closely with MassDOT's district office to assure that the selected option will meet all of MassDOT's design and construction criteria.







ASSABET RIVER RAIL TRAIL Planning and design services Marlborough, Ma

Client/Owner

Marlborough Economic Development Corporation

Services Provided

- Planning
- Landscape Architecture
- Public Participation
- Grant Funding Assistance
- Conceptual Design

Project Overview. The Marlborough section of the Assabet River Rail Trail is one segment of a five-town, 12.5-mile-long trail that generally follows the route of the former Marlborough Branch Railroad. Following the trail's construction by MassDOT, BSC was selected by the Marlborough Community Development Corporation, a local non-profit, to provide additional planning and design services to enhance the trail. The goal of the project was to make the trail more inviting, tie the trail into the surrounding neighborhoods, and assist in stimulating economic development on and within the area of the trail.

Public Participation. BSC facilitated a series of public forums to generate local interest and consensus for the project. Outreach activities included six focus groups and two public charrettes, attended by City representatives, trail abutters, and existing and potential trail users. Information learned through the public forum process became the basis for design suggestions for key study areas and recommendations for other areas that could be incorporated as either short- or long-term improvements to the trail and the surrounding areas.









ASSABET RIVER RAIL TRAIL PLANNING AND DESIGN SERVICES



Trail Planning. Using the feedback from the public participation process, BSC planned a series of amenities and developed a phased action plan for future implementation. Proposed improvements include furnishings, way-finding and interpretive signage, gateway enhancements, and gathering spaces.

Promotional Materials and Final Report. Final products for the project were a poster, pamphlet, and report which included a summary of the process and information collected, design suggestions for key study areas, overall improvement recommendations, an action plan and identification of potential funding sources. The poster and pamphlet will be used to promote trail use and enhancements through postings in schools, city offices, local businesses, and submission to funding mechanisms at the local, state, and federal level.



BLACKSTONE GATEWAY PARK Multi-Use bridge and boardwalk Worcester, Ma

Client/Owner

City of Worcester

Services Provided

- Master Planning
- Multi-Use Path and Bridge Design
- Landscape Architecture
- Structural Engineering
- Civil Engineering
- Survey
- Public Participation
- Grant Funding Assistance
- Environmental Planning and Permitting







Project Overview. BSC

Group worked with the City of Worcester and the Greater Worcester Land Trust to produce a master plan and design for a passive, recreational, urban park with a



network of trails and boardwalks to support hiking, biking, and nature education activities. Located on 29 acres of conservation land in the City of Worcester, the park offers public access through a series of entry parks that connect to over 4,000 linear feet of pathways and boardwalks. Elements include stonedust paths and boardwalks with overlook platforms, canoe launches, and nature information panels located throughout the ecologically sensitive area. The project is adjacent to the terminus of the Blackstone River Valley bikeway and the future Blackstone River Gateway Visitor Center.

Bridge and Boardwalk Design. BSC designed and detailed a pedestrian bridge and boardwalk system as part of Worcester's plan to provide public access improvements to the Blackstone Gateway Park along the bank of the Middle River. The pedestrian bridge spans the river adjacent to an existing dam, and then a boardwalk connected to the bridge carries pedestrians over existing wetlands to an existing footpath. Research indicated that the best alternative for the pedestrian bridge was a prefabricated bow truss. One abutment of the pedestrian bridge was supported on a portion of the dam structure, and at the other end a concrete bent cap was supported on helical micropiles. The boardwalk extension of the walkway was constructed of timber joints and bent caps supported on helical micropiles, with recycled composite decking. The project also included scenic overlooks along the river that are constructed similarly to the boardwalks and are supported on helical micropiles.

Phased Construction. Limited financial resources required that plans allow for phased construction and design; therefore, BSC planned improvements to allow for phased implementation as funds become available. Final construction documents were also prepared.

Grant Application Assistance. BSC Group assisted in the preparation of an application for Urban Rivers Initiative grant funding, which supported the design of Phase I improvements.



BICYCLE AND PEDESTRIAN TRAIL STUDY PITTSFIELD, MA

Client/Owner

City of Pittsfield

Services Provided

- Bikeway/Pedestrian Pathway Design
- Environmental Permitting Strategy
- Public Participation



Project Overview. BSC Group has provided planning, public participation, permitting, and design services for a bike/pedestrian pathway to help connect key open space resources in the City of Pittsfield. The new

bike path segment is an important opportunity to extend the regional Ashuwillticook Rail Trail into the City and provide an attractive recreational opportunity for community residents. The success of the project will offer residents improved health, a recreational resource, a tourist amenity, stronger neighborhoods, increased property values, and an alternative to motorized vehicles.



Evaluation of Trail Options. As part

of documenting the preferred routes for the north and middle sections of the trail through Pittsfield, BSC has examined and evaluated various trail route options for the City. Evaluated conditions include: wetlands, property ownership, topography, connections to community resources, estimated costs, and similar elements. As options were developed, permitting needs were identified and strategies suggested for implementation.

Public Participation. The public participation process for the City's bikeway and pedestrian study entailed leading several public meetings as well as working closely with an ad hoc advisory committee assembled by the City for this project. The ad hoc committee helped BSC identify key individuals and groups to invite to public meetings, promote these meetings which included planning charettes, and analyze the input received from the public. BSC used the public meeting process to seek input on various alignment options, as well as present an analysis of the alignment options, discuss the pros and cons of each, and determine a preferred alignment.





CONCORD RIVER GREENWAY LOWELL, MA

Client/Owner

City of Lowell

Lowell Parks & Conservation Trust, Inc.

Services Provided

- Landscape Architecture
- Environmental Permitting
- Artist Coordination
- Construction Services









Project Overview. BSC Group provided permitting and landscape design services for the Concord River Greenway, a multi-use pathway linking Downtown Lowell and the Rogers Fort Hill neighborhood through a network of walkways between key urban features. The Greenway will itself provide passive recreational opportunities associated with the river; including walking, biking, bird watching, and access for rafting, kayaking, and canoeing. The project will offer residents a cultural and recreational resource as well as a regional tourism attraction. BSC addressed ADA accessibility, as well as design elements including gateways, overlooks, site furnishings and coordination with an artist who will be adding artwork to site furnishings, rails, benches, and trash receptacles. In addition, BSC environmental scientists and regulatory specialists have worked with the project team to identify a permitting strategy in support of such issues as riverfront development and river crossings.

Public Participation and Integrated Arts. The public participation process for the Greenway began with the development of a Public Art Plan developed by the Lowell Parks and Conservation Trust. Based on the recommendations of this plan a team consisting of an artist, engineers and landscape architects was assembled to see the project through to construction. The public outreach portion of this project entailed preparing presentation materials for special events, as well as working closely with the artist, representatives from the Concord River Greenway Trust the City of Lowell and the Parks and Conservation Trust.

Development of Design and Construction Documents. To actualize the artistic and environmental vision of the community, BSC Group planned the layout of key features and then developed multiple concepts exploring the function and character of these features. Final development of construction documents and specifications involved coordinated detailing of art elements and accessibility and bioremediation features.

SOUND VIEW BEACH BIKE TRAIL DESIGN OLD LYME, CT

Client/Owner

Town of Old Lyme

Services Provided

- Planning
- Parking Evaluation
- Cost Estimating
- Grant Assistance
- Public Presentation





Project Overview. BSC was

retained by the Town of Old Lyme to provide planning and design services for their Sound View Beach area. "Sound View" is a classic New England beach community home to a mix of seasonal and year-round residents and seasonal businesses. It draws thousands of visitors from Old Lyme and surrounding towns during the summer months.



Planning. The Town retained BSC to plan upgrades and enhancements to support the beach area and beach patrons. BSC's work on the project included an assessment of existing facilities, creation of a Master Plan for new facilities to meet the current demands of the beach's various user groups, and the preparation of conceptual designs for the various improvements. The final plan included enhanced parking in a dedicated lot, defined on-street parking, kiosk-type parking meters, pedestrian walkways, "green spaces" for picnicking and passive recreation, and bathroom facilities. The plan provided connectivity between the Sound View area and other shoreline locations in town.

Funding Assistance. With assistance from BSC, the Town was awarded a grant through the Federal Transportation Alternatives Program (TAP) under the Moving Ahead for Progress in the 21st Century Act (known as MAP 21). These funds are administered through the Connecticut Department of Transportation.

Transportation Engineering and Bike Trail Design. BSC designed a shoreline bicycle route from the Sound View Beach area to the vicinity of Interstate 95, a route of approximately 4.5 miles on town and state roads. The bicycle route was designed based on American Association of State Highway and Transportation Officials (AASHTO) and ConnDOT standards.





UNIVERSITY OF CONNECTICUT CAMPUS-WIDE BIKE FACILITIES Storrs, CT

Client/Owner

University of Connecticut

Services Provided

- Planning
- Civil Engineering
- Transportation Engineering/Traffic Analysis
- Permitting
- Land Surveying





Project Overview. BSC provided transportation/civil engineering services for the University of Connecticut to design a comprehensive plan for campus bicycle routes. Based on the University's goals of improving and promoting bicycle transportation on campus, BSC evaluated, planned, and prepared design materials required to construct a campus bikeway that traversed approximately 28,000 lf of the Storrs campus and adjacent state roads. BSC conducted preliminary assessments of proposed bicycle routes, evaluated existing roadway geometries for their ability to support bicycle traffic based on the American Association of State Highway and Transportation Officials Manual on Uniform Traffic Control Devices standards, and prepared preliminary bikeway plans for presentation and review by University officials and the Connecticut Department of Transportation (ConnDOT). BSC then prepared final construction documents for the bikeway and submitted design documents for work on state routes to ConnDOT.







STRATFORD BIKEWAY/GREENWAY EXTENSION Stratford, CT

Client/Owner

Town of Stratford

Services Provided

- Bikeway Design
- Transportation Engineering
- Civil/Site Engineering
- Mapping/Geographic Information Systems
- Planning







Project Overview. BSC was retained by the Town of Old Stratford for the planning and conceptual design of a 2.5-mile extension of the town's riverfront Bikeway/Greenway. This portion of the project will extend the existing off-road portion of the Bikeway/Greenway to the Stratford Town Center with several "spurs" connecting to points of interest along both the Stratford shoreline as well as historically significant areas such as Academy Hill and Mac's Harbor. BSC is developing a unifying theme along the route to provide a setting that promotes bicycle and pedestrian traffic while providing opportunities for passive and active recreation for Town residents. Working closely with the town Bikeway/Greenway committee, BSC has prepared base mapping for the project area, completed a comprehensive assessment of existing conditions, analyzed various roadway treatments to accommodate bicycle and pedestrian users, and is now developing the conceptual design.

BSC's scope of work includes the development of base mapping through the compilation of Geographic Information Systems (GIS) and aerial photographs to identify land use and existing transportation infrastructure, "in-field" observations/assessments and photo documentation of existing conditions and potential trail routing. BSC is currently investigating various on-road and off-road options that will be presented to the town's Greenway Committee.





SILVER SANDS STATE PARK AND Walnut Beach Boardwalk Milford, Ct

Client/Owner

Connecticut Department of Construction Services

Services Provided

- Landscape Architecture
- Environmental Permitting
- Civil/Site Design







Project Overview. BSC was retained by the Connecticut Department of Construction Services to provide planning and design services for a boardwalk project at Silver Sands State Park and Walnut Beach in Milford, CT. This project received a Merit Award from the American Council of Engineering Companies of Connecticut's (ACEC/CT) Engineering Excellence Awards in 2012.

Boardwalk Design. The BSC team has provided landscape architecture and site design expertise for the extension of the existing boardwalk at Silver Sands State Park as well as the construction of a new boardwalk at the City of Milford's Walnut Beach. The new boardwalk totals approximately 3,800 feet, and is currently the longest continuous boardwalk in Connecticut. The design involved vehicle crossings for Nettleton Creek and Fletcher Creek, and the design of a bench area access road that includes a tidal wetlands crossing. BSC's project approach has considered such factors as sustainable and cost-effective materials selection, pedestrian accessibility and ADA compliance, and waterfront structure integrity. Some sections of the boardwalk were designed to allow for removal and storage during the off-season and storm events.





SILVER SANDS STATE PARK Milford, Ma



Sustainability. Working within coastal areas necessarily requires special consideration for the preservation of natural resources. BSC's sustainable design featured the use of recycled plastic material for the boardwalk. This material is durable and easily maintained, while also providing a comfortable, splinter-free surface for barefoot beachgoers.

The project was affected by the need to protect endangered species, including the re-routing and redesign of the boardwalk to protect nesting habitat of the long-eared owl and piping plovers. Additionally, the construction schedule was affected by the need to halt work during the piping plover's breeding and hatching season.

Crossing of Tidal Streams. The boardwalk crossed several tidal streams, which are the crucial connection to tidal wetlands located adjacent the dunes. The streams needed to be maintained during and after construction. BSC not only maintained the stream capacities through the design of bridges over these streams, but also increased the flow to these tidal wetlands due to restoration of existing deteriorated culverts, which were actually restricting tidal flow to the wetlands.

Environmental Planning and Permitting. BSC worked closely with Connecticut Department of Environmental Protection State Parks and the Office of Long Island Sound Programs to align the new boardwalk in a manner sensitive to the wetlands and dune habitats. BSC also provided technical data and graphics support to assist the Connecticut Department of Construction Services in applying for the requisite environmental permits, including a Coastal Area Management permit.





BOLTON GREENWAY EXTENSION Bolton, CT

Client/Owner

Town of Bolton

Services Provided

- Feasibility Assessment
- Programming
- Planning/Layout
- Multi-user considerations
- Public Presentations
- Bikeway Design





Project Overview. BSC was retained by the Town of Bolton to provide assessment, planning, and design a 1.85 mile section of Greenway along Route 44. As the first component of a multi-use bicycle/pedestrian facility along Route 44, the Town's goal is to provide facilities that serve as an "extension" to the nearby Charter Oak Greenway being completed by ConnDOT along Route 384 in East Hartford and Manchester. With fund-

ing through a grant from the Connecticut Department of Energy and Environmental Protection's (DEEP) Recreational Trails Program, BSC is providing a variety of services to conduct a feasibility assessment, planning, and design of the Greenway facility which will be located along the Route 44 corridor from Quarry Road extending to the Coventry town line. The project also includes a spur trail to the Town's Indian Notch Park, a popular destination for local residents.

The BSC team developed mapping for the project area, completed several assessments of the proposed corridor, conducted a layout analysis, and prepared conceptual layouts/designs of the facility. Because Route 44 is a state road, BSC closely coordinated with ConnDOT at all stages of the project. To conclude the planning stage of the project, BSC conducted a formal public informational meeting to present the results of the assessment and planning process. BSC is currently in the design stage of the project, preparing plans for a shared-use path facility that will parallel Route 44 with an associated "Share the Road" (Sharrow) spur connecting to Indian Notch Park.







Location Blandford, MA

Client MassDOT – Highway Division

Owner MassDOT – Highway Division

Project Type Bridges & Transportation

Services Highway Design, Bridge Design,

Duration Start date: 2012 End date: 2016

Construction Cost \$6 million

Construction Completion Date 2016

Project Description

This specialty project was performed under MassDOT's Bridge Preservation Program. A 7-ft. diameter by 330-ft. long corrugated steel pipe culvert, buried beneath approximately 25 feet of fill below Interstate 90, is to be replaced utilizing tunneling methodology. The existing pipe culvert is under I-90 EB & WB and spans over a tributary to Peebles Brook in the town of Blandford. The existing culvert is partially collapsed and areas of highway embankment are caved in.



The replacement structure consists of a 9-ft. diameter precast concrete culvert that is to be constructed utilizing tunneling methodology. Due to the high ADT of the I-90 highway, the structure shall be installed without any traffic closures and maintaining the existing roadway geometry, which includes two traffic lanes in each direction. The new culvert will be installed parallel to and to the west of the existing location. The new culvert will have reinforced concrete headwalls at both ends and will be positioned so that the length of the new culvert is the same as the existing structure. Upon completion of the new culvert, the stream flowing into the existing culvert will be diverted into the new culvert. The old culvert will then be filled with controlled density fill and capped with concrete walls.

HMM Role

HMM's scope of work for this assignment consisted of evaluation of tunneling options, hydraulic report, and all related work pertaining to preparing both bridge and temporary access PS&E for the proposed replacement of a collapsed steel pipe. HMM evaluated all feasible tunneling alternatives for the proposed structure and gave consideration to Context Sensitive Solutions and the goals and objectives of the Department. Pre-fabricated and/or pre-cast elements were utilized to the maximum extent possible. In addition, construction techniques that allow for expedited construction with minimal disruption to traffic were considered. The preferred tunneling alternative consisted of jacking precast concrete pipe sections beneath the roadway, for which HMM designed a jacking pit and receiving pit at the ends of the proposed culvert for construction.

HMM prepared bridge sketch plans along with final PS&E; calculations; special provisions; and estimate of quantities. HMM also prepared the project traffic management and work safety zone protection plan. In order to access the jacking pit, a 600-ft. long temporary access road was designed and HMM prepared 25%, 75%, and final design documents. Additional tasks included were scour protection design at headwalls in accordance with FHWA HEC-20 and HEC-23, hydraulic report preparation, stream diversion plans, and preparation of environmental permits. Finally, HMM furnished and prepared all necessary documents and displays for the public information meeting and public hearings along with attending the public information meeting.

HMM is to provide construction services after the award of the construction contract. HMM shall attend the pre-construction meeting, attend bi-weekly job site meetings, review all shop drawings, review submittals, and review ground movement data. Due to the specialist nature of the tunneling, HMM will also provide a trained and experienced tunnel inspector to monitor the quality of construction as it relates to maintaining design integrity, monitor progress and safety of the tunneling works, and assist in the resolution of any potential tunnel related issues during construction.

Highlights

- HMM furnished and prepared all necessary documents and displays for the public information meeting and public hearings along with attending the public information meeting.
- The structure is to be installed without any traffic closures, and maintaining existing roadway geometry.
- Preferred method consisted of tunnel jacking of precast concrete pipe sections.



Location Burlington, ON

Client City of Burlington/CNR

Project Type Rail/Road Bridge

Services

Schedule 'C' Class EA Detailed Design Public Communication Bridge Engineering Tender Preparation Staging Complex Construction Retaining Wall Designs Neighbourhood Aesthetics Construction Administration

Duration

EA Phase: 2005 Detailed Design/CA: October 2011 to 2014

Construction Cost \$22 million

Project Description

Canadian National (CN) Railway's Oakville Subdivision at King Road is an integral part of their Great Lakes Region. King Road is within the jurisdiction of the City of Burlington and is located at Track Mile 33.31 along the CN Oakville subdivision serving CN's freight traffic, commuter traffic on GO Transit's busiest corridor, and VIA Rail's passenger service. King Road is a two-lane arterial road intersecting four CN tracks.

The project involved an initial EA phase consisting of the preparation of a combined Provincial Schedule 'C' Class and Federal Environmental Assessment (2005). The subsequent engineering phase consists of preliminary and detailed designs and preparation of a program of tender documents for construction contracts (led by City of Burlington and CN) that comprise the at-grade crossing work.

The grade separation of CN's mainline railway and King Road was principally accomplished by means of erecting a concrete reinforced bridge structure, constructed adjacent (south) to the location of the grade separation and sliding it into place using 'bridge jacking/sliding' design and technology. This innovation was selected due primarily to the fact that the existing mainline tracks could not be taken out of service for the duration required to construct the bridge in place and as such an alternative method had to be engineered to minimize conflict with daily operations of the Oakville Subdivision.

HMM designed the structure to be built adjacent to the tracks. During a weekend shutdown, CN's three mainlines were taken out of service and the structure was slid, using hydraulic jacks, into place. The tracks were then restored in time for regular commuter traffic.



Another critical and sensitive element of the project is the existing Indian Creek that had to be temporarily realigned during construction and subsequently permanently realigned. To facilitate the permanent alignment crossing King Road, an open-channel post-tensioned concrete aqueduct bridge structure will be designed and constructed to carry the existing Indian Creek over top of King Road. This aqueduct structure will be integrated into CN box structure by way of shared retaining walls that will also be designed for the purpose of creating an aesthetic that complements the surrounding neighborhood. The road reconstruction of King Road will include the construction of an urban two-lane roadway accompanied by bi-directional bike lanes and sidewalks.



HMM Role

HMM was the Prime Consultant responsible the entire project, from completion of the Environmental Assessment including Public Information Centres, through to detailed design, tender preparation of three contracts, coordination of utility relocations and Construction Administration. During Construction Administration, HMM was responsible for oversight of the construction, including overall coordination of several contracts on site for CN, as well as the utility companies.

Project Highlights

- Design of a box structure that involved a 'bridge-sliding' methodology is the largest such undertaking by CN in Ontario. Methodology allows for construction of the grade separation to be carried out without a rail detour, resulting in an accelerated installation and reduced cost.
- Innovative interlocking pipe-pile wall used for abutments allowed for support of excavation to be installed quickly to meet schedule while maintaining performance and efficiency.
- Design of a gravity fed storm sewer system allowing sustainable and efficient stormwater management of the underpass.
- Innovative watercourse engineering involving the design of an aqueduct structure carrying Indian Creek over King Road.
- Design of temporary rail protection for the support of the CN tracks.

BOSTON GREEN LINKS PLAN



To better connect the City's residents to its parks, the Boston Transportation Department developed a Green Links Plan. Boston has a wealth of open space, including both large parks and miles of linear parks that provide pleasant conditions for walking and bicycling throughout the City. The City hired KAI (as a member of the NBBJ team) to identify the best connections between neighborhoods and parks, with an emphasis on serving families and individuals with a wide range of abilities.

Our approach identified candidate links with low traffic speed and volume, or with excessive width from which protected facilities could be established. It also identified crossing barriers, such as inhospitable intersections or rail/river crossings. By solving these challenges at spot locations, the Plan will unlock the larger park network for Boston's residents.



Client: Boston Transportation Department Reference: Charlotte Fleetwood, Transportation Planner | Boston Transportation Department | Boston City Hall, Room 721, Boston, MA 02201 | 617-635-2462 | charlotte.fleetwood@boston.gov Location: Boston, MA Cost: \$200,000 (KAI \$26,500) Date Started: August 2014 - Ongoing

MONTGOMERY COUNTY BICYCLE PLANNING GUIDANCE





Montgomery County, Maryland received a grant through the Metropolitan Washington Council of Governments' (MWCOG) Transportation/Land Use Connections program to develop bicycle classification guidance for the County. KAI led a process with the Montgomery County Planning Department and its key stakeholders to advance bicycle planning to help build an attractive network for a broader portion of the County's population.

The Montgomery County Bicycle Planning Guidance (Attachment A) provides two tools for evaluating the needs of different bicycling groups. The first is a "prescreening" tool that identifies those bicycle facilities that are most appropriate under different combinations of traffic speed and traffic volume. Separate pre-screening tools were created for the "Interested but Concerned" and "Enthused and Confident" cyclist groups.

A second tool is the Level of Traffic Stress (LTS) methodology that assigns road segments and intersection crossings a level of traffic stress from 4 (highest) to 1 (lowest). These levels correspond to the Four Types of Transportation Cyclists typology:

- Level of Traffic Stress 4: Strong & Fearless
- Level of Traffic Stress 3: Enthused & Confident
- Level of Traffic Stress 2: Interested but Concerned
- Level of Traffic Stress 1: Appropriate for most children

The LTS tool was tested in Downtown Bethesda and identifies a number of deficiencies in the bicycling network for the "Interested but Concerned" population. The Bicycle Planning Guidance was developed with input from the Montgomery County Department of Transportation. It was also reviewed with a focus group of bicyclists in Montgomery County, representing a good distribution of geographic areas, tolerance for traffic stress, and gender.

Client: Montgomery County Planning Department; Metropolitan Washington Council of Governments (MWCOG) Reference: David Anspacher | (301) 495.2191 Location: Montgomery County, Maryland Cost: \$40,000 Date Completed: June 2014



MOVING **FORWARD**THINKINGTM

Section 5: Submission Requirements

BSC's response is organized to facilitate your review of our proposal.

Complete Responses For Belmont's Review

BSC Group is pleased to fully respond to each important element of the Town of Belmont's RFP. This non-price proposal Section 5 addresses those Submission Requirements presented on Pages 7, 8 and 9 of the RFP.

- Item 1, Cover Letter BSC's cover letter is presented as the first page(s) of our proposal.
- Item 2 through Item 6 Responses to the noted requirements (General Approach, Variances, Insights, Scope of Work, and Schedule) are presented together as Section 2: General Approach.
- Item 7, Organization Chart Our team's organization chart is presented in Section 3: Team Organization, Professional Staff, and Capacity.
- Item 8, Resumes Resumes are presented at the end of Section 3: Team Organization, Professional Staff, and Capacity.
- Item 9, Examples Project examples demonstrating success on at least three similar projects are presented in Section 4: Team Experience and Client References. One completed feasibility study is presented as an appendix to our proposal.
- Item 10, Disclosures BSC has been involved in two projects requiring rebidding during the last five years.

On one project with the Town of Norwell, BSC provided civil design services in response to a request from the Town who was in need of corrective design services for a small portion of the town cemetery that was designed by another consultant. After providing the requested design services, BSC issued plans and specifications, and the Town put the \$75,000 cost-estimated project out to bid in October 2015. The bid specifications included a requirement for completing the project in a condensed schedule before the start of winter. The lowest qualified bid received was higher than the estimate which we believe was influenced by the busy market, condensed schedule, small sized project, and anticipation of a winter with heavy snowfall similar to 2015. The Town decided to hold off on the project until after winter 2016, and is preparing to rebid the project this spring

On behalf of the Town of Belmont, BSC provided transportation engineering design and construction plans for a two-mile portion of Trapelo Road and Belmont Street in Belmont and Watertown. The construction was to be funded by MassDOT. The initial plans and specifications included maintaining the MBTA catenary wires for trackless trolley service in place during construction. Because the bids exceeded the cost estimate, BSC Group was requested to modify the design plans by MassDOT in order to rebid this project without the catenary wires which then resulted in bids within the cost estimate. The construction of the project is nearly 100% complete,



Section 5: Submission Requirements

Essential to our management approach is our commitment to maintaining budget and schedule, while assuring the quality of deliverables--we believe our team has the capacity to complete this study.

- Item 11, References BSC is pleased to present client references for projects completed within the last five years. References are presented in Section 4: Team Experience and Client References, and include several for proposed project manager Bill Paille's work prior to joining BSC.
- Item 12, Capacity Section 3: Team Organization, Professional Staff, and Capacity includes a listing of all proposed personnel, their current project commitments, and their availability to support the Town of Belmont's Community Path Feasibility Study. Understanding the December 2016 deliverable date for this study, we do not currently foresee any conflicts with overlapping projects affecting the availability/ schedules of proposed key personnel. Our project manager, Bill Paille, is committed to providing the Town of Belmont with prompt and quality delivery of engineering services in support of the Community Path Feasibility Study. As shown in Section 3, our proposal includes a comfortable depth of staff to achieve this study on schedule.

BSC's resource management team, which includes senior managers from each of the firm's major disciplines, meets each week to assess staff availability and constraints. Project managers know in advance of upcoming schedules for staff and recognize the commitments we make to our clients for work completion.

- Item 13, Financial Statements A proprietary copy of BSC's abbreviated 2015 financial statement concludes this section.
- Item 14, Potential Conflict of Interest BSC has no known conflicts of interest with this community path project, nor do we have any affiliation with groups or persons that have an interest in the project.
- Item 15, Certificate of Non-Collusion The signed certificate is included with this Section 5.
- Item 16, Statement of Tax Compliance The signed statement is included with this Section 5.



BSC COMPANIES, INC. AND SUBSIDIARIES CONSOLIDATED FINANCIAL STATEMENTS YEARS ENDED DECEMBER 31, 2015 AND 2014

Gosule, Butkus & Jesson, LLP Certified Public Accountants
INDEPENDENT AUDITOR'S REPORT (continued)

Auditor's Responsibility (continued)

In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of BSC Companies, Inc. and Subsidiaries as of December 31, 2015 and 2014 and the results of their operations and their cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

Gosule, Bit Kur Osson

Gosule, Butkus & Jesson, LLP Certified Public Accountants

Milton, Massachusetts March 20, 2016

BSC COMPANIES, INC. AND SUBSIDIARIES CONSOLIDATED BALANCE SHEET DECEMBER 31, 2015 AND 2014

LIABILITIES AND STOCKHOLDERS' EQUITY

	2015		2014	
Current liabilities:				
Current maturities of notes payable	\$	80,894	\$	84,434
Current maturities of notes payable - related parties		164,263		144,543
Current maturities of capital lease obligations		210,489		158,542
Accounts payable		39,738		54,183
Accrued expenses		486,650		557,680
Advance payments on contracts		662,374		760,216
Accrued compensation and				
employee benefit obligations		642,140		899,247
Accrued income taxes		≩n		231,262
Deferred taxes		1,698,912		1,462,059
Total current liabilities		3,985,460		4,352,166
Long-term debt:	9			
Notes payable, less current maturities		146.539		217.647
Notes payable - related parties, less current maturities		727,823		726,867
Capital lease obligations, less current maturities		464,319		249,529
Pension obligation		191,018		105,325
Total long-term liabilities		1,529,699		1,299,368
Total liabilities	-	5,515,159		5,651,534
Stockholders' equity:				
Common stock, no par value				
200,000 shares authorized				
21,122 and 20,419 shares outstanding, respectively		1,284,814		1,052,931
Retained earnings		1,711,729		1,439,323
Notes receivable from stock sales		(183,349)		(140,528)
Accumulated other comprehensive income:				
Pension plan liability adjustment, net of tax		(384,098)		(295,983)
Total BSC Companies, Inc. equity		2,429,096		2,055,743
Non controlling interest in consolidated subsidiaries				
Total stockholders' equity		102,766	1000 and 1000	104,711
		2,531,862		2,160,454
	\$	8,047,021	\$	7,811,988

See accompanying notes and independent auditor's report.

BSC COMPANIES, INC. AND SUBSIDIARIES CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME AND RETAINED EARNINGS YEARS ENDED DECEMBER 31, 2015 AND 2014

		Retained Earnings		Comprehensive Income (Loss)		Accumulated Other Comprehensive Loss	
Balance, December 31, 2013	\$	788,521	\$	654,774	\$	(306,929)	
Net income		993,153		993,153			
Common stock reacquired		(342,351)					
Other comprehensive income, net of tax: Minimum pension liability adjustment	19 <u></u>			10,946		10,946	
Balance, December 31, 2014	\$	1,439,323	\$	1,004,099	\$	(295,983)	
Net income		441,856		441,856			
Common stock reacquired		(169,450)					
Other comprehensive income, net of tax: Minimum pension liability adjustment				(88,115)		(88,115)	
Balance, December 31, 2015	\$	1,711,729	\$	353,741	\$	(384,098)	

See accompanying notes and independent auditor's report.

APPENDIX D

REQUEST FOR PROPOSALS

BELMONT COMMUNITY PATH FEASIBILITY STUDY

CERTIFICATION OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

April 22, 2016

Date

BSC Group, Inc.

Name of Entity submitting bid, whether individual, partnership, corporation, joint venture or other business or legal entity.

Corporation

Type of Entity

803 Summer Street

Address

Boston, MA 02127

617-896-4300

Telephone

By

Authorized signature of entity submitting proposal - Thomas Loughlin, PE

Vice President and Principal

Signer's duly authorized position, office or title

APPENDIX E

REQUEST FOR PROPOSALS

BELMONT COMMUNITY PATH FEASIBILITY STUDY

STATEMENT OF TAX COMPLIANCE

Pursuant to M.G.L. Chapter 62c, Section 49A, I certify under the penalties of perjury that this firm, to the best knowledge and belief, has filed all State Tax returns and paid all State Taxes required under law.

04-2980671

Federal Identification Tax Number

BSC Group, Inc.

Name of Entity submitting bid, whether individual, partnership, corporation, joint venture or other business or legal entity.

Corporation

Type of Entity

803 Summer Street

Address

Boston, MA 02127

617-896-4300

Telephone

By

adriel N/Acyp

Authorized signature of entity submitting proposal David N. Hayes, PE

President and Chief Executive Officer

Signer's duly authorized position, office or title