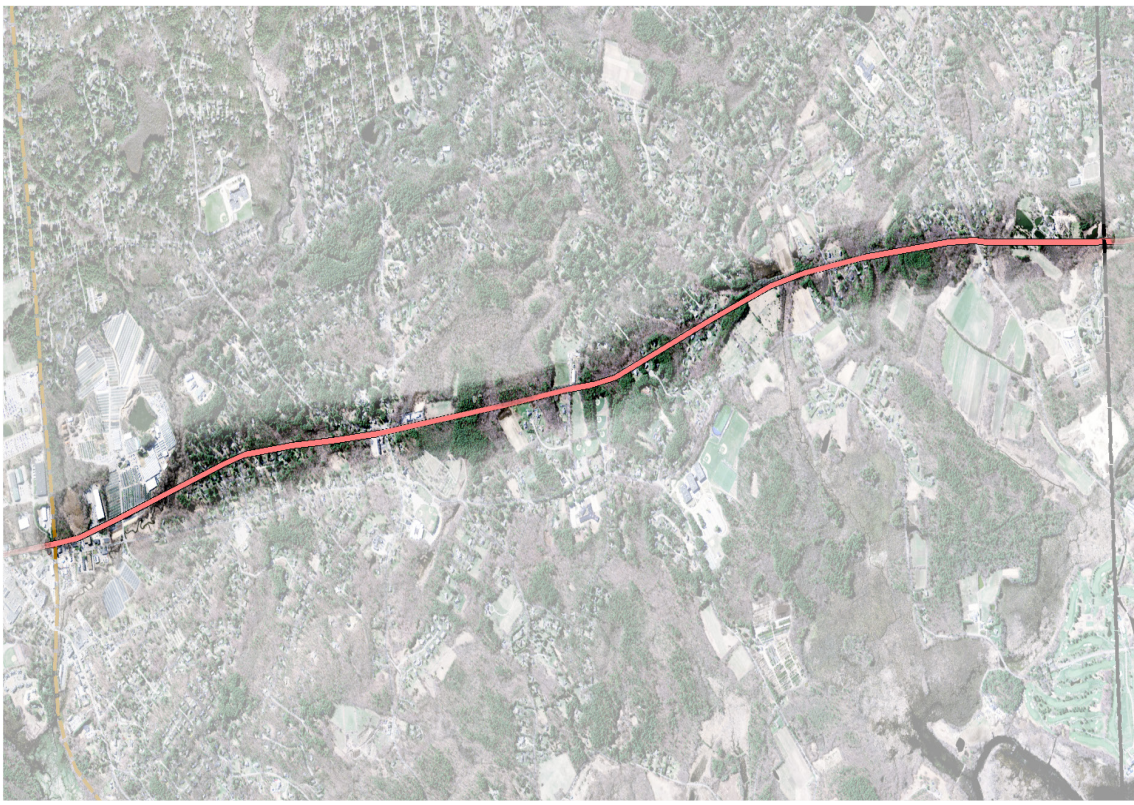
Proposal

25% Engineering/Design Services

Bruce Freeman Rail Trail



SUBMITTED TO **Town of Sudbury**

SUBMITTED BY

VHB *Vanasse Hangen Brustlin, Inc.*

OCTOBER 3, 2014

Transportation
Land Development
Environmental
Services

VHB imagination | innovation | energy Creating results for our clients and benefits for our communities

Vanasse Hangen Brustlin, Inc.

October 3, 2014

Jody Kablack
Director of Planning and Community Development
Town of Sudbury
Flynn Building
278 Old Sudbury Road
Sudbury, MA 01776

Re: 25% Engineering/Design Services for the Bruce Freeman Rail Trail

Dear Ms. Kablack:

The Town of Sudbury has embarked on an important step towards the completion of the 4.6 mile section of the Bruce Freeman Rail Trail that runs through the center of town. The rail corridor extends from South Sudbury near Route 20 to the Sudbury/Concord Town line. To accomplish this, the Town has selected three firms to submit responses for the preparation of a 25% design plan to meet MasssDOT standards. VHB is thankful to be one of the firms selected for this important project and are delighted to have the opportunity to present our qualifications, experience and vision to the Town of Sudbury.

As a prequalified consultant with MassDOT, VHB is familiar with the agency's requirements and standards, with a successful record of completing numerous MassDOT-funded multiuse path projects over the past 30 years. Our experience extends from Maine to Florida - from the Acadia Carriage roadways in Maine to the Venice Rail Trail in Sarasota County, Florida. We have worked on historic trails that respect historic places, trails that negotiate sensitive environmental resources, trails with complicated intersections, as well as trails with unique and dynamic abutter concerns.

Our multiuse path experience in Massachusetts is especially strong. Principal-in-Charge, Trish Domigan, PE, and Project Manager, Tracie Lenhardt have worked together on numerous bike path projects, including the Blackstone River Greenway, in Blackstone, Millville, and Uxbridge, the MassCentral Rail Trail ENF, Watertown Bike Path, Burlington Bike Path Enhancement, Minuteman Bikeway Extension in Bedford, and the Amelia Earhart Dam Bikepath Crossing project in Somerville. They will be supported by Bill Desantis, PE, who has led dozens of successful multi-use path projects in the nation over the last decade, and a highly experienced team of surveyors, environmental scientist and traffic engineers, all with thorough knowledge of MassDOT and municipal funding and a passion for overcoming challenges.

Our experienced team of technical professionals are ready to apply our skills and dedication to complete this exciting project. If you have any questions about this submittal, please contact me at Pdomigan@vhb.com or (617) 924-1770 for more information.

Thank you for the opportunity to submit this proposal and we look forward to your favorable review.

Very truly yours,
VANASSE HANGEN BRUSTLIN, INC.

Trish Domigan, PE
Director, Massachusetts Municipal Services

Francis S. O'Callaghan, PE
New England Regional Manager

101 Walnut Street, Post Office Box 9151
Watertown, Massachusetts 02471-9151
617.924.1770 ▪ FAX 617.924.2286
www.vhb.com

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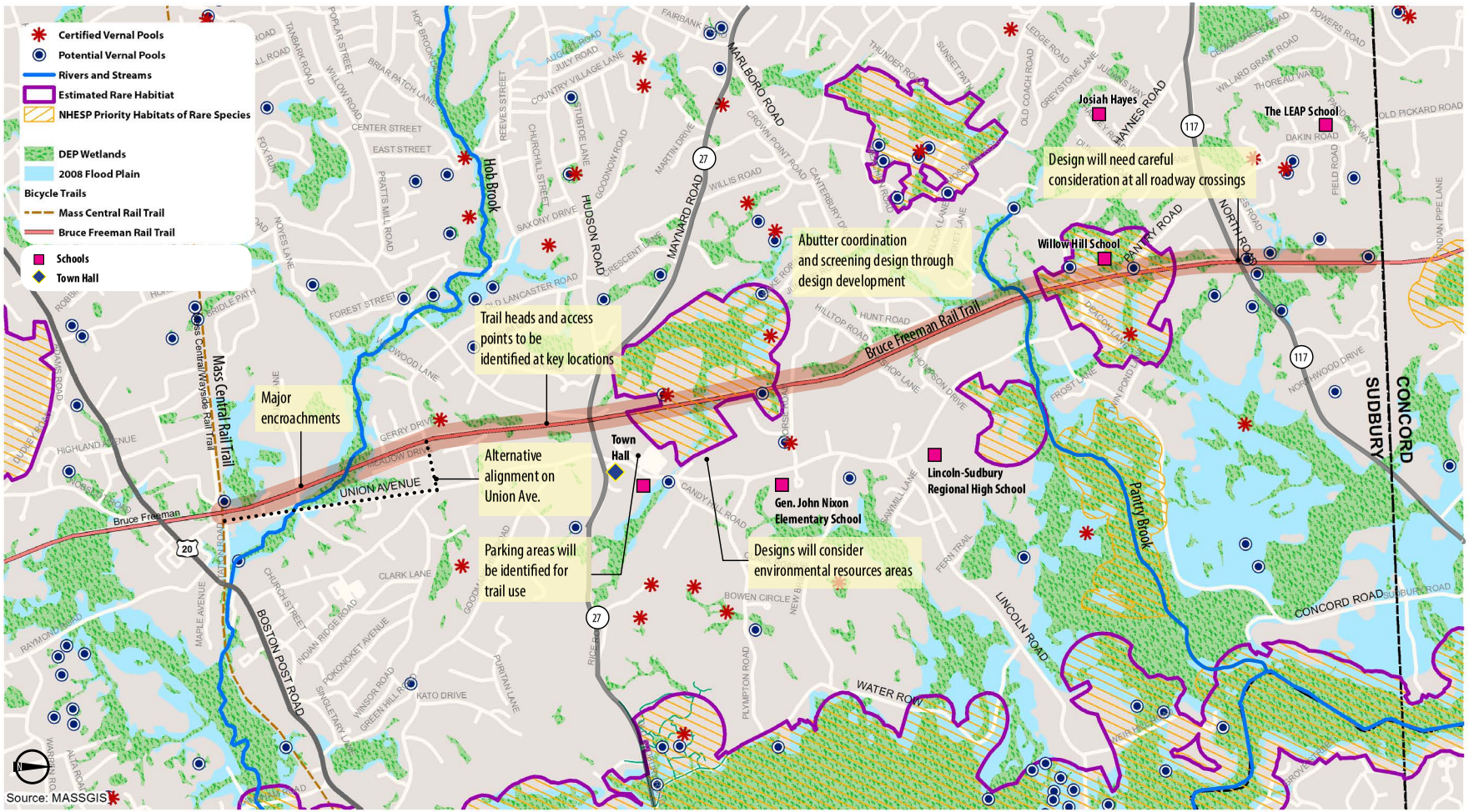
Issues and Opportunities Map



1

Project Understanding and Approach



1

1. Project Understanding and Approach

Begin With the End in Mind—The Vision

In 1987 the Central Transportation Planning Staff (CTPS) prepared a feasibility study for the Lowell – Sudbury Bicycle Path, currently known as the Bruce Freeman Trail. The objective of CTPS study was to determine if building a multiuse trail from Sudbury to Lowell along the abandoned rail right-of-way was viable, and what the short- and long-term costs would be. The study reviewed the condition of the rail line, right-of-way ownership, surrounding land use, construction cost, and long-term maintenance costs to develop the abandoned rail line into a multiuse path from Route 20 in Sudbury north to Route 3 in Lowell. The study concluded that it is feasible to construct a trail along the abandoned rail line.

Since the completion of the CTPS study, the town has invested significant resources into the evaluation and advancement of the rail trail and are ready to develop the preliminary design of the trail. To support the Town of Sudbury's desire to move ahead with the preliminary design and ultimate construction of the trail, VHB will complete the engineering services required to submit the project design at the preliminary (25%) stage to MassDOT. These services will include providing supplemental survey to the survey completed by Atlantic Engineering in 2009, locating wetland boundaries and submitting an Abbreviated Notice of Resource Area Delineation to the Sudbury Conservation Commission, the preparation of a preliminary trail design that complies with MassDOT-Highway Division and AASHTO criteria, development of design options for the at-grade crossings at Route 117 (North Road), Pantry Road, Haynes Road, Morse Road, Route 27 (Hudson Road), Codjer Lane and Old Lancaster Road, an alternatives analysis for the rail trail from Old Lancaster Road to the Massachusetts Central Rail Trail, a parking study at the Davis Field parking lot, community outreach, meetings with the town, and abutter coordination.

Community Outreach

Bike path construction creates a range of emotions from both local residents and organizations in the region. Public meetings scheduled to educate the community and get input for the design can become controversial and packed with people who are adverse to a formalized bike path near their homes. Common concerns include vandalism, theft, privacy, trespass, and development in sensitive environmental resources and wildlife habitats. VHB understands these concerns and have developed a community outreach approach that focuses on educating the public on the benefits of rail-to-trail projects—from health benefits to improving property values for those abutting the trail. We use examples of concerns raised by other communities that have constructed rail-to-trail projects and encourage communication from concerned citizens on the trail creation. Public meetings will be documented and there will be follow-up responses provided. We encourage the Town to create a page on the Town website that highlights public meetings, handouts, presentation graphics, and responses to comments. This will help the community feel comfortable with the progression of the project.

Trail Design and Construction along Former Railroads

The right-of-way has been physically abandoned for some time, but the steel rails and wood railroad ties remain in place throughout most of the right-of-way within the project limits. Historic use of rail beds involved the use of oil and coal to power trains, the use of herbicides to manage vegetation, and incidental spills of hazardous materials cargo.

Our team will incorporate the Massachusetts Department of Environmental Protection's Best Management Practices to address the potential exposure to contaminated soil by capping the soil in place with the trail pavement and shoulder landscaping.

Trail Crossings at Roadways

The proposed trail crosses public roadways at seven locations: Route 117 (North Road), Pantry Road, Haynes Road, Morse Road, Route 27 (Hudson Road), Codjer Lane, and Old Lancaster Road. Route 117 and Route 27 carry significant traffic volumes, especially during the peak morning and afternoon commuting hours.

Each of these locations will be field reviewed to identify the appropriate improvements necessary to provide safe crossings and access in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and the MassDOT Project Development and Design Guidebook. VHB will evaluate roadway and trail geometry, intersection sight distances, grades and roadway traffic volumes and speeds to assess each location for both trail users and motorists. Working with the Town, VHB will assemble traffic volume data and crash diagrams at all of the crossing locations. We will also prepare a warrant analysis at the crossings and design the most appropriate trail crossing for each roadway location. If warranted, VHB will assemble trail crossing recommendations such as a full pedestrian signal, HAWK signal, or RRFB, in addition to proper signage and pavement markings.

Trail Heads and Amenities

Recreational trail users need adequate information regarding the bikeway route, water, amenities, restroom facilities and location of repair and emergency services. Local points of interest provide users the opportunity to explore other areas of the community. Community businesses benefit by providing services to the trail users. Details for trailhead facilities and amenities such as secure bike racks, picnic/seating areas, benches, shade, water, and sign/information kiosk graphics and structures will be included in the preliminary design.

Parking Facilities

Often multiuse trails users must drive to reach them. To accommodate these out-of-area users and to help allay neighborhood concerns, designated parking areas should be established. Parking and access to the path will need to be compliant with the Americans with Disabilities Act (ADA). VHB will work with Town staff to identify appropriate locations for parking along the corridor. In addition, a parking study will be completed for the Davis Field parking facility as part of the design process.

Environmental Constraints

Much of the rail corridor is adjacent to wetlands, vernal pools, wildlife habitat and other undisturbed natural areas. Proximity of the project site to these sensitive resources presents a significant challenge to the bike path design. An open and ongoing dialog with the Conservation Commission throughout the design process will be imperative to insure an appropriate design is prepared and is permittable under the Wetlands Protection Act and the Sudbury Wetland Protection Bylaw. Minimizing clearing to maintain natural buffers to wetlands, controlling stormwater runoff to prevent flow directly to wetlands and vernal pools, and providing proper site controls during construction will be important to protect the natural resources. The presence of these natural resources are not only critical to protect during construction and operation of the bike path but would offer a truly exceptional riding, running or walking experience and an opportunity for interpretive signage to educate the public in the value and importance of our natural spaces.

Construction Funding

Construction funding for infrastructure projects can be challenging to secure. The Town, working with MassDOT and the Metropolitan Area Planning Council, is seeking to secure funding through the Transportation Improvement Program (TIP) for construction advertisement in 2019. VHB has helped many communities secure monies through the TIP process in all of the regional planning areas in Massachusetts. We understand how competitive the funding is and how to beat the competition.

Abutter Coordination and Communication

Properties adjacent to abandoned rail trails sometimes take over the right-of-way without knowing they are encroaching on publically-owned land. In addition, issues may arise from clearing the rail trail corridor and the natural screening along the right-of-way. Communication is the key to a successful project. VHB will meet with the five major property owners along the rail trail and work with them to achieve a design that meets both the town's (and regional) objectives, as well as addressing the abutters concerns.

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Completed Workbooks

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2. Completed Workbooks

As requested in the RFP, the following pages include the fully completed Workbooks —Attachment B: MassDOT Model Scoping Workbook and Attachment C: Sudbury Scoping Workbook. We have also included a VHB completed MassDOT Standard for Scope of Services and Man hour Estimates as Attachment A with the Price Proposal to provide clarity and understanding on behalf of the reviewers of this proposal.

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 Park Plaza, Boston, MA

STANDARDIZED
SCOPE OF SERVICES GUIDANCE
FOR PREPARING
WORK HOUR ESTIMATE FORMS
FOR CONSULTANT SERVICES

REVISED NOVEMBER OF 2013 – PRESENTED TO DESIGNERS JANUARY 21, 2014

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

The Bruce Freeman Rail Trail (BFRT) is a proposed 25-mile rail trail between Lowell and Framingham along the former Lowell Secondary Track right-of-way of the Old Colony Rail Road. In Sudbury, the rail corridor extends through the center of Town, approximately 4.4 miles from South Sudbury at the trail intersection with the Massachusetts Central Rail Trail, north to the Sudbury / Concord Town line. This portion of rail corridor is owned in its entirety by the Commonwealth of Massachusetts.

PART B – TASK DESCRIPTIONS

The following information provides a comprehensive description of tasks that may be required to design a MassDOT project. It is understood that certain projects may have specific circumstances that will require that additional tasks be defined and negotiated. Additional tasks shall be numbered consistent with the appropriate Section and added to the Work Hour Estimate Form.

SECTION 100 PROJECT DEVELOPMENT ENGINEERING

101 Project Concept Preparation (Development of Purpose and Need)

VHB shall prepare a general description and definition of the project. Visit site and conduct preliminary surveys.

SECTION 150 ENVIRONMENTAL

General

The following task descriptions included in this Section provide a basic description of the various actions to be taken in the environmental permitting process. MassDOT's Environmental Services Division should be consulted regarding all environmental permitting requirements.

151 Early Coordination

Coordinate with local, regional, state, and federal resource agency staff to provide them with an opportunity to indicate whether environmental resources are in the project area and their extent and potential significance; to present issues or concerns; or to provide input on the endorsed alternatives.

153 Massachusetts Endangered Species Act (MESA) Determination

Determine the appropriate level of documentation in the MESA process by reviewing the most recent MNHESP Priority Habitat map to determine if the proposed work is located within a mapped area. If a project is not located within a mapped polygon then no early coordination with MNHESP is required.

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HIGHWAY DIVISION

154 Hazardous Materials Research/Review

Provide information generated in accordance with the requirements of Section 2-A-7, *Environmental Requirements for 25 Percent Design,* of the *Project Development and Design Guide* to the MassDOT Hazardous Materials Unit during its review.

155 Project Development Meetings and Public Hearings

Prepare for and hold public meetings and public hearing(s) as agreed upon by MassDOT and the Consultant.

156 National Environmental Policy Act / Massachusetts Environmental Policy Act (NEPA/MEPA) Determination

Determine the appropriate level of documentation in the NEPA process (Categorical Exclusion, Environmental Assessment (EA) or Environmental Impact Statement (EIS)) and the MEPA process (Environmental Notification Form (ENF) or Environmental Impact Report (EIR)) by meeting and coordinating early with government agencies, local boards and commissions, and conducting public meetings, as agreed upon in the Scope of Services.

157 NEPA–Categorical Exclusion (CE)

Prepare a Categorical Exclusion (CE) Determination Checklist for Federal-Aid Actions in accordance with the *Programmatic Agreement For Approval Of Categorical Exclusions Between The Federal Highway Administration And The Massachusetts Highway Department*, dated May 17, 2005, and Federal Highway Administration Regulation 23 C.F.R. § 771.117 (1987).

163 MEPA–Environmental Notification Form (ENF)

Not included

176 Wetland Resource Area Delineation

Conduct wetland resource area delineation in accordance with the Massachusetts Wetlands Protection Act (WPA), MGL C. 131 § 40, and the Federal Clean Water Act, the *1987 Corps of Engineers Wetlands Delineation Manual,* and guidance in *Clarification and Interpretation of the 1987 Manual*, dated March 6, 1992. Include all field time associated with delineating wetland boundaries and time attending local, state, and federal site meetings to review and verify wetland boundary lines. If applicable, documentation must be provided on state Appendix G Wetland Delineation Forms or US Army Corps Wetland Determination Forms for submittal to regulatory agencies.

177 WPA Abbreviated Notice of Resource Area Determination (ANRAD)

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Prepare an ANRAD in accordance with the WPA to obtain approval of wetland resource area boundary lines. Include the preparation of all associated forms and backup documentation, coordination during review, site walks, and attending Conservation Commission meetings.

184 Wildlife/Rare Species Assessment

Not included

186 Coordination and Liaison

Include scheduling and participating in environmental meetings with MassDOT assisting in expediting the permitting process, and compiling and maintaining environmental files and records.

SECTION 200 FUNCTIONAL DESIGN REPORT

A Functional Design Report, or Technical Traffic Memorandum documents the process for determining the preferred alternative and the parameters for design.

201 Establish Purpose and Need

VHB will establish a purpose and need statement of the project.

202 Public and Agency Outreach

VHB will conduct public and agency outreach for the project to ensure that the project meets its intended purpose, benefits from the input and feedback from interested citizens, local and regional groups, and elected officials, and maintain strong support.

203 Evaluate Existing Conditions / Context and Parking

VHB will provide a narrative of locations the trail will cross existing roadways including lane configurations, key dimensions, design speed, posted speed, Speed Regulations, functional classification, environmental constraints, Roadway context, roadway users, etc. Include a project locus map.

VHB will determine the existing parking supply at the parking lot on Route 117 at Davis Field. VHB will collect typical weekday and weekend existing parking demand data through field observations.

204 Prepare Traffic Volumes

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HIGHWAY DIVISION

Town will provide appropriate traffic counts for the study area and VHB will provide an assessment of data to determine factors for background growth and seasonal adjustments. Prepare the future design volumes.

205 Conduct Safety Analysis

No anticipated roadway crossings are HSIP-eligible based on recent crash history. VHB will collect, tabulate, and analyze the crash data and document trends and causes based on crash reports provided by the local Police Department for any on-road portions of the proposed route Prepare crash rate work sheets, collision diagrams, and collision mapping and review safety with respect to the Safety Review Prompt List as required.

206 Evaluate Signal Warrants

VHB will analyze traffic count data with respect to the MUTCD Traffic Control Signal Needs (Warrants) based on the existing geometric conditions to determine if signals are justified for either a traditional traffic signal or for a pedestrian hybrid beacon at each roadway crossing.

209 Development of Alternatives

For each crossing location VHB will provide a discussion and evaluation matrix of alternatives considered.

211 Preferred Alternative

VHB will provide a description and graphical presentation of the preferred alternative for each roadway crossing.

For the preferred alternative, VHB will estimate the parking demand of the BFRT users at the Davis Field parking lot. VHB will consider the nearest parking facility in Concord (one location) in the calculation of demand estimates. VHB will review the immediate rail trail vicinity to determine whether there are other appropriate locations for designated parking areas in Sudbury. If so, these areas will be incorporated into the 25% design plan.

214 Traffic Management

Prepare a Construction Management Outline providing a description of all major construction components of the project and how vehicle, pedestrian, and bicycle accommodations will be maintained.

217 Report Preparation

Prepare a report detailing the various design alternatives with appropriate graphics and descriptive text justifying the recommendations presented.

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SECTION 240 CONCEPTUAL DESIGN

241 Constraints map.

VHB shall prepare a constraints map on an aerial plan to include base survey information, wetlands limits, other environmental constraints, ROW lines, encroachments, etc. Describe constraints in narrative terms. Complete a constructability review.

242 Conceptual Alignment

VHB shall identify construction details, provide critical cross sections and vertical and horizontal geometry of entire length of rail trail, including surface treatment, shoulders, road crossings, bridges, etc. in accordance with MassDOT Shared Use Paths and Greenways requirements and as directed by the Town.

243 Path Alternatives Analysis

VHB shall also identify design alternatives for constrained areas from Old Lancaster Road, to the Mass Central Rail Trail. The alternative alignment will follow the Union Ave right of way, including pros/cons and cost/benefit analyses. VHB assumes that the only alternative route will be along Union Avenue.

SECTION 250 TOWN MEETINGS

VHB shall attend meetings with Town boards, commission, departments, residents and abutters. VHB shall prepare and any meeting handouts and shall prepare meeting minutes.

251 Town Public Meetings

VHB shall facilitate eight (8) public (night) meetings, throughout the design process. The public meetings shall focus on addressing the communities concerns and comments associated with the development of the rail trail. Meeting material shall be prepared prior to the meetings, and forwarded to the town for review and comment. All public meetings shall be documented, and materials shall be forwarded to the Town for posting on the Town website, if requested.

252 Town Staff Meetings

VHB shall attend twelve (12) day time staff meetings.

253 Monthly Progress Reports

VHB shall provide the Town with monthly updates and/or progress reports.

254 Abutter Meetings

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VHB shall meet with abutters to determine privacy and screening needs. It is assumed that there will be up to ten (10) abutter meetings.

SECTION 300 25% HIGHWAY DESIGN SUBMISSION

Field Surveys

Complete or partial field surveys may be made by either the MassDOT or VHB or partially by each, as designated in the Scope of Services and Special Provisions.

Surveys shall be made as necessary for the preparation and completion of preliminary and final designs, contract plans and layout plans for the project, including an investigation and survey of property boundaries and property owners' names as obtained from records filed at the Registry of Deeds.

Horizontal control, including control for photogrammetry, shall be of second order precision and accuracy unless otherwise specified, and in strict conformance to the current *Massachusetts Highway Department Survey Manual* (*Survey Manual*) or *Specifications for Aerial Surveys and Mapping by Photogrammetric Methods for Highways*, whichever applies.

Primary traverses and proposed connection to Massachusetts Geodetic Survey (MGS) control shall conform to Section 2 (Survey Information) of the *Survey Manual*. The primary traverse must be designed so that it will be connected in position and azimuth to MGS monumentation of equal or higher accuracy.

Primary control and all main base line surveys shall be computed and adjusted according to the guidelines set forth in the *Survey Manual*.

Vertical control, including control for photogrammetry, shall be of the accuracy and datum as specified in the *Survey Manual* and shall be subject to the same review and other conditions as horizontal control.

VHB shall include in the survey notebooks adequate ties to all horizontal and vertical control points, for the new limits of work, so that these points may be reproduced accurately. VHB shall also furnish tie–sheets of these points. VHB shall be responsible for reestablishing points, including baseline stakes or pins, which it placed and which become displaced or removed and cannot be replaced by existing ties.

Field survey shall also include obtaining the location of wetland flags or other marks, which have been established by others.

Data from survey notes shall be transcribed and plotted on base plans, profiles and cross sections in accordance with current practices of MassDOT and to the scales directed by the Engineer.

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All field surveys and plotting of such data, including base lines, details and cross sections, shall be performed in accordance with the *Survey Manual*, data collection specifications and approved MassDOT CADD procedures.

Utilities

VHB shall contact the various utility companies and authorities, whose facilities may be affected by the proposed construction, to request from such companies and authorities the locations of existing facilities, together with proposed changes, if any.

VHB shall design alterations of publicly owned utilities, which may be required due to construction of the project, except in cases such as alterations of fire or police signal systems or other systems where, in the opinion of the Engineer, public convenience or safety requires such alterations to be designed and performed by the particular public agency involved. Insofar as practical, and as approved by the Engineer, designs of such alterations of publicly owned utilities by VHB shall conform to the requirements and design standards of the particular public agency involved.

In connection with all alterations of utilities not designed by VHB, whether publicly or privately owned, and in connection with alterations of facilities of public transit systems or railroads, the Consultant shall furnish to the agencies involved data needed for their design of the alterations, including data regarding possible interference with other facilities. The Consultant shall review designs prepared by other agencies in connection with the work under this Contract and shall coordinate all alterations, whether designed by him/her or by others. In the case of utility or railroad alterations to be designed at the expense of the Commonwealth by other agencies, such as state or municipal departments, utility owners or railroad companies, the Consultant shall assist MassDOT in obtaining cost estimates from those agencies.

301 Project Initiation and Data Compilation

Compile and review all available documents of existing features and planned projects in the vicinity of the proposed work. Included, as part of this task, is the investigation of utility installations, previous subsurface explorations, traffic data, and right of way research.

302 Utility Coordination

VHB will contact public and private utility agencies to verify locations of existing utilities within the limits of work (Codjer Lane, Old Lancaster Road, Hudson Road (Rt 27), Morse Road, Hayes Road, Pantry Road and North Road (Rt 117). These existing utilities, such as gas, water, telephone, cable, electric, etc. will be shown on the updated base plan from these record drawings. Invert elevations, pipe size, pipe type, and direction of flow field located in task 305 below will also be plotted on the base plan

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303 Survey Coordination and Controls

Coordinate ground survey effort, review survey controls and closures, baseline ties and overall quality of survey.

304 Base Plans, Profiles and Typical Sections

Updated existing base plan prepared by Surveyor of Record in 2008 and last revised in 2009 to MDOT Civil 3D 2012 survey template per the procedure by MassDOT Survey department supplied to VHB.

Perform field review of base plan information. Verify the location of existing features, note legends on all warning, regulatory and route marker signs. Verify that the plans provide sufficient information regarding existing drainage and sewer systems. Verify that the cross sections include existing features such as walls, hydrants, poles, trees, sills, wells, ledge, layout lines, etc. Verify that profiles include station equations, cross culverts, bridge structures, sills, high-tension lines, benchmarks, etc.

305 Field Reconnaissance

Horizontal and Vertical Control

VHB will recover Existing Horizontal and Vertical control completed by the Surveyor of Record. It is assumed that the Town will forward

Survey Updates

Area 1 – Codjer Lane Roadway Survey - VHB will perform field survey to locate approximately 600 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 2 – Old Lancaster Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

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Area 3 – Hudson Road (Rt 27) Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 4 – Morse Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 5 – Hayes Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 6 – Pantry Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 7 – North Road (Rt 117) Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition,

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ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Wetland Delineation Survey – (i) VHB will perform field survey to locate wetlands Flagged by VHB Environmental Engineers along the 4.4 mile ROW. The survey limits will include locating flags by total station 25' beyond the Existing ROW; (ii) VHB will perform field survey of delineated wetland flags within the seven (7) roadway areas noted above.

306 Plot Existing Layout Lines

VHB will plot and calculate existing layout line geometry and note all property owners within the new limits of work (Codjer Lane, Old Lancaster Road, Hudson Road (Rt 27), Morse Road, Hayes Road, Pantry Road and North Road (Rt 117). and add them to the updated base plan.

307 Meetings and Liaison

VHB will attend one (1) utility meeting with all Utility Companies and the District 3 DUCE.

VHB will attend two (2) meetings with MassDOT. One meeting will be a coordination meeting and the other shall be the comment resolution meeting.

308 Determine Roadway Cross Section

N/A – It is assumed that the path will be 10' paved with 2' shoulders on each side.

309 Preliminary Horizontal Geometry

VHB shall develop horizontal geometry based on minimizing environmental & cultural resources, abutting properties and intersected roadway crossings.

310 Preliminary Vertical Geometry

VHB shall develop vertical geometry based on minimizing impacts to environmental resources and the existing ballast.

311 Cross Section Studies

VHB shall conduct an iterative horizontal and vertical geometry refinements for critical cross sections based on the interface with the proposed cross-section and existing features.

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

312 Prepare Cross Sections

VHB shall prepare cross sections to determine the tops and bottoms of slope. Evaluate the impacts to resource areas, the need for retaining walls and determine the limits of work.

313 Plot Proposed Layout and Easements

VHB shall identify any proposed permanent or temporary easements and rights of entry, based on the limits of work determined by the cross sections.

314 Pavement Design

N/A –

315 Typical Sections

VHB shall prepare representative typical sections for the path alignment at various locations.

316 Construction Details

VHB shall provide details of key features only. Since this is the 25% design, not all details will be finalized or provided.

317 Hydrological Studies and Hydraulics Report

N/A

318 Preliminary Drainage and Utility Studies

VHB will develop a drainage design for the rail trail. It is anticipated that the drainage system will consist of a series of water quality swales that will discharge to the surrounding wetlands.

319 Lane Configurations

N/A

320 Traffic Signals

If deemed applicable, VHB will prepare signal plans depicting signal head type, quantity, and location and include the sequence and timing chart and preferential phasing diagram for traditional traffic signal designs and/or pedestrian hybrid signals.

321 Signs and Pavement Markings

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

VHB will prepare preliminary sign and pavement marking plan to document changes associated with conceptual design.

322 Traffic Management

VHB shall provide a general methodology for constructing the proposed project roadway crossings to minimize the impact to motorists and abutters, while at the same time addressing construction costs and constructability. Prepare preliminary temporary traffic control plans.

323 Miscellaneous Contract Plans

VHB shall prepare miscellaneous full size drawings for 25% submission. These shall include the following miscellaneous contract plans, as required: Title Sheet, Index, Key Plan, General Plans, Alignment Plans, Profiles and Special Details.

324 Constructability Review

VHB will review the proposed project to ensure that the project does not present unusual matters that would unduly increase the cost the project or present potential scheduling delays during construction resulting in claims for extra work.

325 Quality Control (QC) Review

VHB shall perform review of the quality and accuracy of the documents to ensure that key aspects of the information to be presented to MassDOT are prepared in accordance with the Guidebook, the Standard Specifications for Highways and Bridges and the most recent Supplemental Specifications, Standard Nomenclature and Engineering Directives.

326 Preliminary Construction Estimate

VHB shall prepare a preliminary cost estimate using MassDOT's Weighted Average Bid Application (WABA). The estimate should be prepared with a level of detail commensurate with a 25% submittal.

327 Submission Checklists

VHB shall prepare and submit the 25% Highway Design and Traffic Checklists.

328 Modifications and Revisions

VHB shall review the comments received at the 25% design stage and revise the plans accordingly, prior to scheduling the public hearing, in order to properly present the nature and extent of the project to the public at the hearing.

329 Value Engineering (VE)

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

N/A

330 Construction Contract Time Determination

N/A

331 Incentives/Disincentives

N/A

SECTION 350 DESIGN PUBLIC HEARING

351 Hearing Preparation

VHB shall prepare the graphics and other visual aids per the negotiated scope of services to display at the public hearing. VHB shall also prepare a public hearing handout.

352 Design Public Hearing

VHB will attend Design Public Hearing, present the project to the public and respond to questions. Assist MassDOT in preparing written responses to letters received from concerned individuals as a result of the hearing.

SECTION 500 RIGHT OF WAY

Preliminary Right of Way plans shall be prepared prior to holding the 25% Design Public Hearing. Existing data, details and all proposed work shall be prepared in such a manner as to be readily discernable. These plans shall remain in the preliminary stage until after the layout has been duly filed in the Registry of Deeds.

501 Preliminary Right of Way Plans

VHB shall determine appropriate limits of alterations to existing layouts, takings, permanent easements, temporary easements, etc and prepare Preliminary Right of Way Plans in accordance with MassDOT ROW requirements. The Right of Way Plans include Title Sheet, Typical Sections, Parcel Summary Sheet, Location Maps and Property Plan Sheets.

502 Layout Plans and Order of Taking

N/A

503 Written Instrument

N/A

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

504 Final Right of Way Plans

N/A

SECTION 600 GEOTECHNICAL DESIGN

N/A

SECTION 700 PROJECT DEVELOPMENT – STRUCTURAL

N/A - VHB assumes that this work will be done after the 25% submission.

SECTION 710 SKETCH PLANS

N/A - VHB assumes that this work will be done after the 25% submission.

SECTION 750 FINAL BRIDGE DESIGN

N/A - VHB assumes that this work will be done after the 25% submission.

ATTACHMENT B: MassDOT Model Scoping Workbook

Scope of Services: Scoping Workbook 25% design			
Please insert tasks from sections C of the Scope of Services under each category below. Insert estimated hours for each task and project team members/subconsultants who will work on each task.			
	Est.Hours	Team Members Working on Task	Comments
1. Data Compilation	16	Tracie Lenhardt	
Section from Scope: 4.A.a.			
2. Utility Coordination	16	Tracie Lenhardt	
Section from Scope: 4.A.c.			
3. Survey Coordination and Controls	8	Craig Robertson	
Section from Scope: 4.A.b.			
4. Base Plans, Profiles and Typical Sections	28	Tracie Lenhardt, Craig Robertson	
Section from Scope: 4.A.b.			
5. Field Reconnaissance	356	Craig Robertson	
Section from Scope: 4.A.b.			
6. Plot Existing Layout Lines	36	Craig Robertson	
Section from Scope: 4.A.d.			
7. Meetings and Liaisons	19	Trish Domigan/Tracie Lenhardt	
Section from Scope: 4.			
8. Determine Roadway Cross Sections	n/a	Tracie Lenhardt	
Section from Scope: 4.B.a.			
9. Preliminary Horizontal Geometry	8	Tracie Lenhardt	
Section from Scope: 4.B.a.			
10. Preliminary Vertical Geometry	12	Tracie Lenhardt	
Section from Scope: 4.B.a			
11. Cross Section Studies	26	Tracie Lenhardt	
Section from Scope: 4.B.c.			
12. Prepare Cross Sections	36	Tracie Lenhardt	
Section from Scope: 4.B.c.			
13. Plot Proposed Layouts and Easements	12	Tracie Lenhardt	
Section from Scope: 5.			
14. Pavement Designs	n/a		
Section from Scope: n/a.			
15. Typical Sections	12	Tracie Lenhardt	
Section from Scope: 5.			
16. Construction Details	12	Tracie Lenhardt	
Section from Scope: 4.B.a.			
17. Preliminary Drainage and Utility Studies	8	Tracie Lenhardt	
Section from Scope: 4.B.c			
18. Traffic Signals	20	Eric Thompson	
Section from Scope: 5.			
19. Signs and Pavement Markings	12	Erin Thompson	
Section from Scope: 5.			
20. Traffic Management	8	Erin Thompson	
Section from Scope: 5.			
21. Early Environmental Coordination	77	Gene Crouch	
Section from Scope: 5.			
22. Constructability Review	6	Don Cooke/Bill Desantis	
Section from Scope: 4.			
23. Quality Control Review	24	Don Cooke/ Bill Desantis	
Section from Scope: 4.			
24. Preliminary Construction Estimates	38	Tracie Lenhardt	
Section from Scope: 5.			
25. Submission Check List	2	Tracie Lenhardt	
Section from Scope: 4.B.b			
26. Modifications and Revisions	22	Tracie Lenhardt/Erin Thompson	
Section from Scope: 4.B.e.			
27. Value Engineering	n/a		
Section from Scope: n/a			
28. Public Hearings	44	Trish Domigan/Tracie Lenhardt	

Additional Scope Items for full MassDOT 25% Design submittal and Environmental Permitting

29. Functional Design Report	108	Tracie Lenhardt/ Erin Thompson	
Section from Scope: 5.			
30. Wetland Flagging	120	Gene Crouch	
Section from Scope: 4.A.a.			
31: File ANRAD	48	Gene Crouch	
Section from Scope: 4.A.g.			
32: Project Development	8	Trish Domigan/ Tracie Lenhardt	
Section from Scope: 4.B.b.			
33. Preliminary ROW Plans	40	Tracie Lenhardt	
Section from Scope: 5.			
34. Miscellaneous Plans	36	Tracie Lenhardt	
Section from Scope: 5.			

ATTACHMENT C: Sudbury Scoping Workbook

Scope of Services: Scoping Workbook Sudbury Specific 25% Design				
Insert estimated hours for each task and project team members/subconsultants who will work on each task. These tasks may already be included in the MassDOT tasks and if so should be omitted and an "x" placed in the second column.				
Full description of Scope can be found on Page 9	If included in MassDOT scope please place a "X"	Est Hours.	Team members Working on Task	Comments
D-1 Hold meetings with Town boards, commissions, departments, residents, abutters, MassDOT, utility companies, etc., and maintain subsequent consultations throughout the duration of the project as needed to advance the project.		116	Trish Domigan/Tracie Lenhardt/Erin Thompson/ Bill Desantis/ Don Cooke	
D-2 Provide the Town with monthly update/ progress reports.		18	Tracie Lenhardt	
D-3 Town liaison to MassDOT representatives and the Boston MPO.		24	Trish Domigan	
D-4 Meet with abutters to determine privacy and screening needs.		40	Tracie Lenhardt	
D-5 Conduct a Parking Needs/Demand Analysis.		44	Erin Thompson	
D-6 Preparation of cost estimates for the completion of the project.	X			
Complete Alternatives Analysis on Union Ave.		62	Tracie Lenhardt	

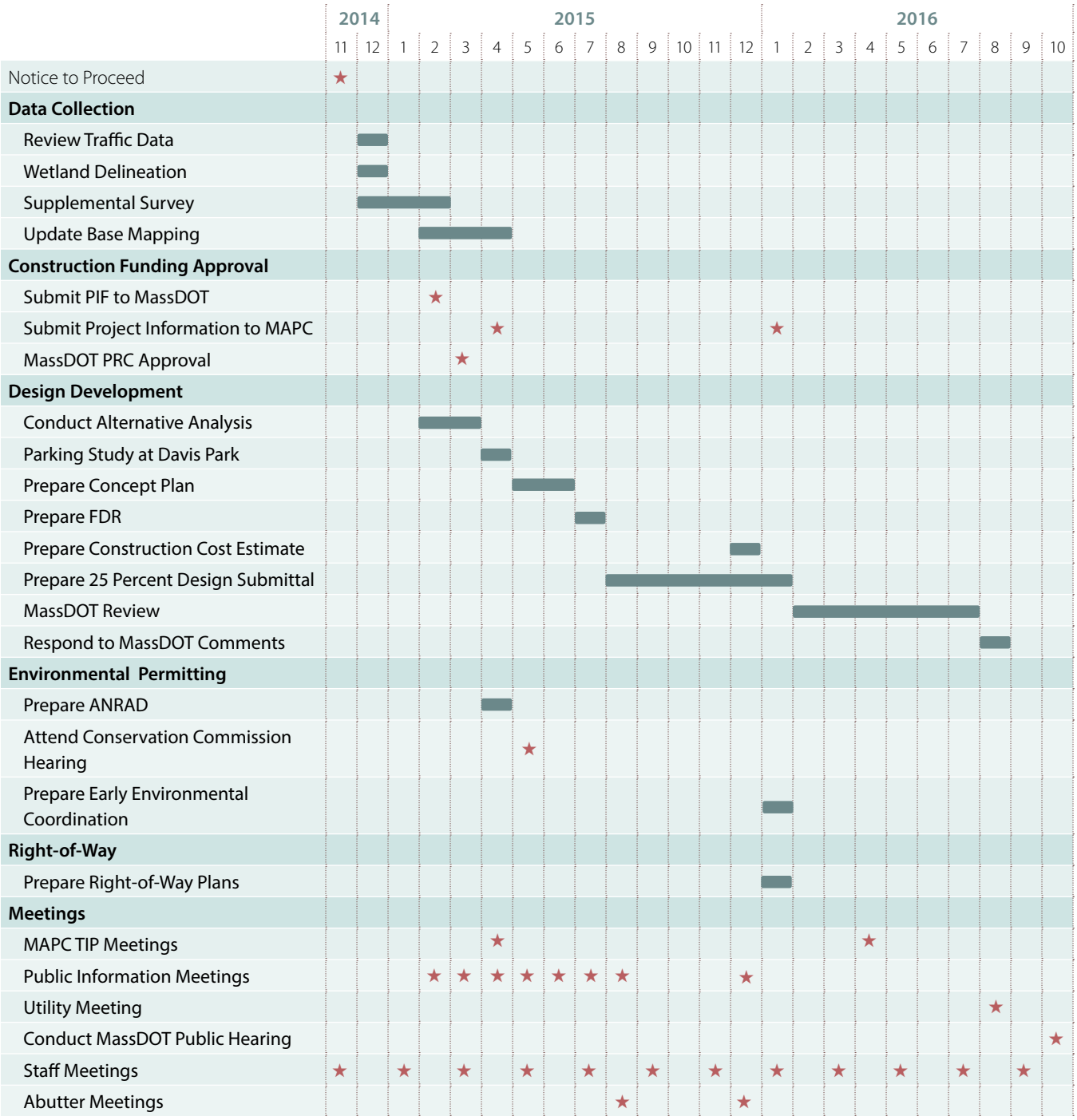
3

Project Schedule

3

3. Project Schedule

The proposed schedule on the following page reflects the major milestones identified in the Request for Proposal. Our familiarity with the The Bruce Freeman Rail Trail, the Town of Sudbury, MassDOT standards and procedures, and the specific project challenges will allow VHB to advance the 25% design without delay.


2014
2015
2016
11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10
Notice to Proceed
Data Collection
Review Traffic Data
Wetland Delineation
Supplemental Survey
Update Base Mapping
Construction Funding Approval
Submit PIF to MassDOT
Submit Project Information to MAPC
MassDOT PRC Approval
Design Development
Conduct Alternative Analysis
Parking Study at Davis Park
Prepare Concept Plan
Prepare FDR
Prepare Construction Cost Estimate
Prepare 25 Percent Design Submittal
MassDOT Review
Respond to MassDOT Comments
Environmental Permitting
Prepare ANRAD
Attend Conservation Commission Hearing
Prepare Early Environmental Coordination
Right-of-Way
Prepare Right-of-Way Plans
Meetings
MAPC TIP Meetings
Public Information Meetings
Utility Meeting
Conduct MassDOT Public Hearing
Staff Meetings
Abutter Meetings

4

Project Team

4

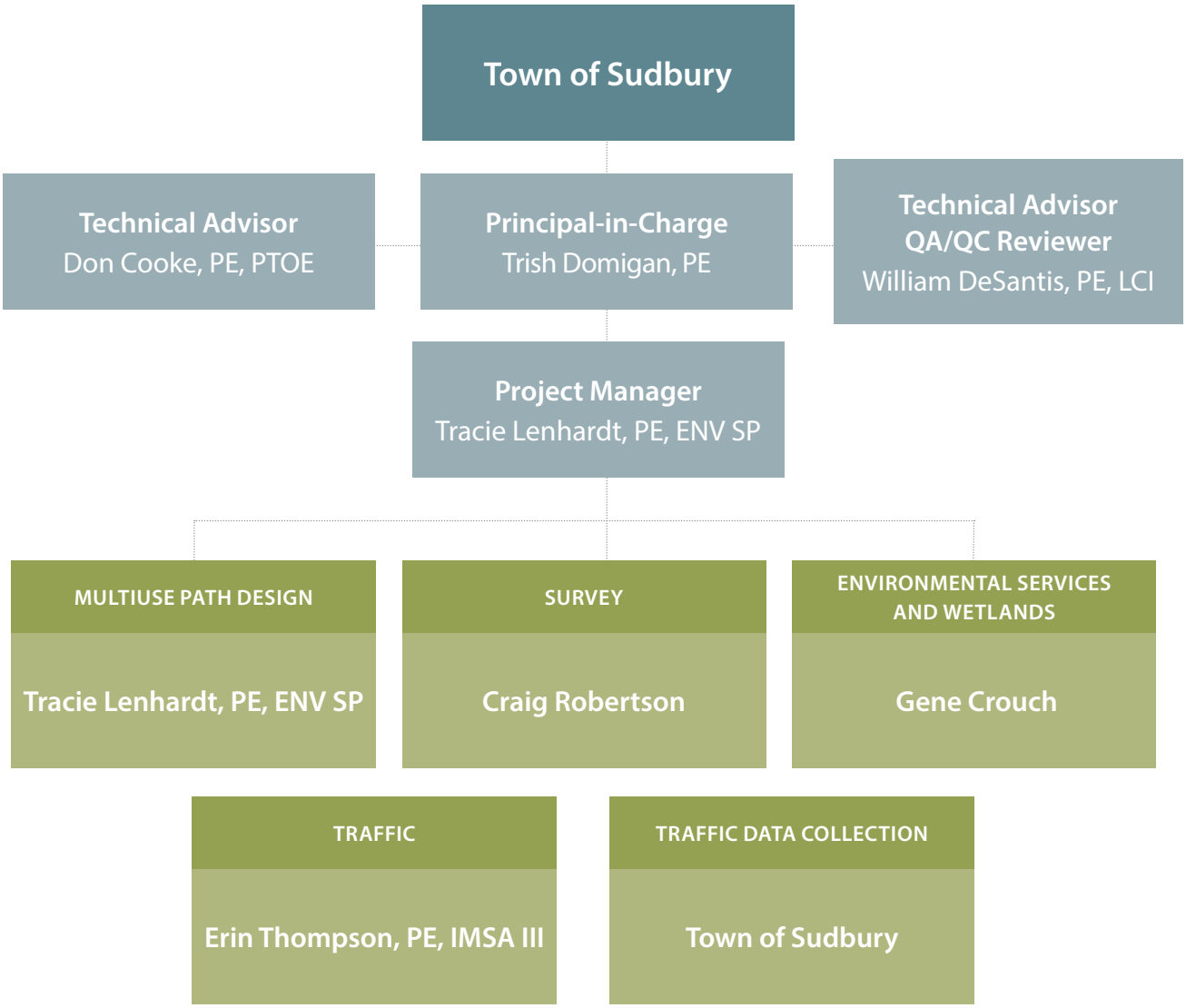
4. Project Team

VHB has assembled a team with long-term experience and an in-depth understanding of multiuse path design, surveying, landscape architecture, and environmental permitting as well as MassDOT Standards. The VHB Team, led by Principal-in-Charge Trish Domigan, PE, offers specific experience working on a variety of rail trails, multiuse paths and greenways, and the unique challenges involved when these paths run through municipalities and residential areas.

Ms. Domigan will be assisted by the VHB team members shown in the organizational chart on the following page. These individuals have worked together for many years and will provide a well developed set of services to meet the needs of the Town of Sudbury. This in-house team offers a mix of skills—from multiuse path design and survey to environmental and wetlands and traffic—tailored to meet Sudbury's goals. The professionals that will be assigned to this project bring experience from similar efforts across New England that will be leveraged to provide the full range of necessary services to complete the 25% engineering & design services as well as identify alternative routes for constrained areas of the path. In addition, VHB is able to draw upon the resource of more than 1,000 technical staff company-wide, should the need arise.

Following is the organizational chart and short biographies of the team members. Full resumes are included at the end of the proposal in Appendix A - Team Resumes.

Project Team



The VHB Team can also provide additional services as needed.

Key Personnel

Trish Domigan, PE, Principal-in-Charge—Trish, a Principal and Director of Municipal Services for VHB, has extensive experience with multiuse paths and roadway design, downtown revitalization projects, and supporting communities in applying for state and federal grants for the design and construction of infrastructure projects. Trish has a particular skill in bikeway and multiuse path projects, having led designs for the Minuteman Bikeway extension in Bedford, Watertown Greenway, multiple segments of the Blackstone Greenway, the Yankee Doodle Bikeway, the Amesbury Riverwalk, and other relevant projects.

Tracie Lenhardt, PE, ENV SP, Project Manager/Multiuse Path Design—Tracie is a Project Manager in the Highway and Municipal Group. She has extensive experience in bike paths, the design of intersection and corridor reconstruction, horizontal and vertical alignments for roadways and bike paths, closed drainage systems, the preparation of design plans, specifications, quantity and cost estimates, and MassDOT permitting. Specific project experience includes engineering design of Segment 1 of the Blackstone River Greenway, the Burlington Multi-Use Path, the Minuteman West Bikeway, and the Watertown Greenway, among numerous other related projects.

Don Cooke, PE, PTOE, Technical Advisor and QA/QC Reviewer—Don is VHB's Managing Director for Transportation Systems. He is a highly experienced transportation engineer with a particular focus on managing significant urban transportation improvement projects. He has analyzed and determined solutions for numerous intersections and traffic issues resulting in improved conditions for pedestrians, bicyclists, motorists and transit users.

William DeSantis, PE, LCI, Technical Advisor and QA/QC Reviewer—Bill is the corporate leader of VHB's Bicycle/Pedestrian and Transportation Enhancement practice. As technical advisor on numerous bicycle/pedestrian and enhancement projects in the eastern United States, he has an active role in the planning, design and construction of bicycle facilities in eleven states. Bill is a technical member of the NCUTCD Bicycle Technical Committee, a member of the League of American Bicyclists, a League Cycling Instructor, a National Mountain Bike Patrol Instructor, a member of the Blackstone River Bikeway Patrol, and a bicycle commuter. He will be the technical advisor and quality control reviewer for this project.

Craig Robertson, Survey—Craig is a Project Surveyor in VHB's Land Survey Group. He has extensive experience in many types of land surveying (Property Line Surveys, Existing Conditions Surveys, ALTA/ACSM Land Title Surveys, Easement Plans, Discontinuance Plans, Deformation Monitoring and Construction Layout) and has performed diverse survey tasks for numerous projects in the greater Boston area for both public and private clients. His responsibilities include developing proposals, crew coordination, checking field notes and procedures, calculations and drafting, final plan checks, and budget analysis.

Gene Crouch, Environmental Service and Wetlands—Gene is a Senior Wetland Ecologist for VHB who specializes in permitting, environmental documentation, freshwater and marine ecology, and research. With close to four decades of experience, he has a thorough knowledge of state and federal environmental legislation and regulations gained through previous experience with the U.S. Army Corps of Engineers (USACE), the National Marine Fisheries Services, and the U.S. Fish and Wildlife Service. Gene serves as our Transportation Engineering/Environmental Services coordinator and works closely with our engineering staff, municipal clients and MassDOT. His experience covers a wide range from simple cold plane and overlay pavement projects to complex major roadway widening projects requiring variances from the MassDEP. Gene will lead the environmental permitting efforts and wetland delineations for VHB.

Erin Thompson, PE, IMSA III, Traffic—Erin, a Traffic Engineer with VHB's Transportation Systems Group in our Watertown office, is a specialist in all facets of traffic design work including development of traffic signal layout, traffic signal coordination, signing and pavement marking plans, geometric layout, and roundabouts as well as preparation of project specifications, contract documents, quantity and cost estimates. Erin is a registered Professional Engineer in Massachusetts and will lead the traffic assessment efforts for VHB.

5

Relevant Experience and Prior Performance

5

5. Relevant Experience and Prior Performance

About VHB

VHB is one of New England's leading providers of integrated planning, transportation, land development, and environmental services. VHB offers the focus and personal attention of a small consulting firm backed by the in-house resources of a 1,000-person, multidisciplinary company. By providing high-quality technical skills in planning, engineering, transportation, and environmental services, VHB has delivered innovative and pragmatic design solutions for some of today's most complex transportation, infrastructure, and land improvement projects.

VHB at a Glance
Established in 1979
Massachusetts offices in Worcester, Springfield, Boston, and Watertown (headquarters)

22 offices from Maine to Florida

1,000+ employees

Engineering News-Record has ranked VHB 76th of the "Top 500 U.S. Design Firms" in 2014

Engineering News-Record has ranked VHB 50th of the "Top 100 Pure Design Firms" in 2014

We are an Integrated Services Consultancy

From offices located in Springfield, Worcester, Watertown, Boston, and Albany, New York, among the 22 offices we operate along the East Coast, VHB provides comprehensive planning and engineering services to clients throughout New England. Our staff includes designers; planners; civil, transportation, and environmental engineers; landscape architects; environmental scientists; and regulatory and permitting strategists. Our in-house technical professionals work closely with our planners to provide detailed analyses to ensure proposed pathway and development scenarios are based on contextual realities. By integrating our service offerings and establishing dedicated, strategic project teams, we quickly achieve a deep understanding of each unique client, project, and community and turn that understanding into context-driven, implementable solutions for our clients. We enjoy our work, love meeting a challenge, and are passionate about our projects.

Bicycle/Pedestrian Services

VHB has over two decades of experience planning and designing bicycle and pedestrian projects in Massachusetts as well as Maine, Vermont, New Hampshire, Rhode Island, Connecticut, New York, Virginia, and Florida; our projects include on-road bicycle networks in both urban and rural settings, greenways and riverwalks, rails-to-trails, and rails with trails. Long before "context-sensitive design" became an industry buzzword, VHB was developing trail projects that preserved each community's unique identity and heritage while adhering to critical elements of accepted design standards for public safety. We take the lessons learned from these years of experience and myriad projects, and apply them to improve our future work.

VHB's dedicated team of bicycle/pedestrian specialists meet regularly to discuss bicycle and pedestrian related issues and bring the most current, creative, and cost-effective solutions to our clients.

No other firm approaches bicycle/pedestrian planning and design quite like we do. Our dedicated team of bicycle/pedestrian specialists meets regularly to discuss bicycle and pedestrian-related issues and bring the most current, creative, and cost-effective solutions to our clients. Our in-house bikeway and bridge designers, landscape architects, and environmental scientists together embrace the challenges of accommodating the multitude of users of our transportation facilities, and work together to determine the most cost-effective use of limited transportation funding resources, and design environmentally sensitive and sustainable projects. Furthermore, VHB understands the importance of project consensus by stakeholders and impacted parties, be they residents, local businesses, government entities, or the traveling public, and involves them to the benefit of the project and the community.

Bicycle Project Awards

VHB has won a variety of awards for our Bicycle Path projects and involvement. These include:

- The Long Island Motor Parkway Trail was selected as **"Project of the Year" for 2011** by the Long Island Branch of the American Society of Civil Engineers (ASCE).
- The Long Island Motor Parkway Trail received a **Silver Award in the Engineering Excellence Program** for 2011 by the American Council of Engineering Companies (ACEC) of New York State.
- Honorable Mention as **Bicycle Friendly Business in 2008**, from the League of American Bicyclists (approximately 100 companies nationwide were listed as Bicycle Friendly Businesses)
- The 2007 American Council of Engineering Companies (ACEC) New York **Silver Award for Transportation Engineering** for the Village of Southampton Bicycle & Pedestrian project in Southampton, NY
- The **American Trails 2004 Corporate Award**, for demonstrating significant, sustained and exemplary service to trail design, planning and implementation
- The 2004 **Engineering Excellence Honor Award** from the ACEC-VT for the Newbury Cross Vermont Trail under I-91 project, which reunites two sections of bike trail disrupted by I-91 substructure. The Cross Vermont Trail is a designated National Recreation Trail.

- The 2003 American Council of Engineering Companies-Vermont (ACEC-VT) **Award of Merit**, for the Sheldon Transportation Path and Bridge project. On this project, VHB performed engineering services to complete the design of the Missisquoi Valley Rail Trail in Sheldon Junction, Vermont.
- The American Trails 2002 **National Trails Planning/Design Award**, for our work on the Blackstone River Bike Trail project. Nominees for this award were required to demonstrate problem solving through innovative methods on a trail project. The project's successful public participation and public agency involvement, and design to enhance the recreational trails opportunities, contributed to the win.

The Long Island Motor Parkway Master Plan developed by VHB has recently won two significant awards, including:

- "Project of the Year" by the Long Island Branch of the American Society of Civil Engineers (ASCE), presented on May 3, 2012
- "Silver Award" in the Engineering Excellence Program by the American Council of Engineering Companies (ACEC) of New York State

VHB's work included the development of a vision plan, site analysis, trail alternatives analysis, and the development of a detailed trail plan. The 27-mile long trail passes through eight towns and villages within Nassau County.

VHB has a proud history of working with clients to help them envision, plan, design, and enhance multiuse bicycle/pedestrian paths that run through their cities and towns. The VHB team brings to this project a broad range of experience gleaned on multiple bicycle/pedestrian path projects, including trail planning and design, pathway and drainage design, environmental permitting, landscape architecture and wayfinding, surveying, and more.

VHB continues to hone a diverse workforce that delivers personal service, value, responsiveness, and excellence. Our ability to help our clients initiate and complete intricate, challenging, and important projects has given rise to an impressive portfolio of success, demonstrated by a high percentage of VHB's clients becoming repeat customers.

The table and project profiles on the following pages represent a sampling of VHB's multiuse trail project experience and are directly relevant to the BFRT project. These projects illustrate our team's proven record of project success and our depth and knowledge in performing similar assignments.

Bike/Trail Planning/Design Projects in Massachusetts

PROJECT	LOCATION	LENGTH (MILES)	CHALLENGES
Statewide Bicycle Transportation Plan	Massachusetts	N/A	Interagency coordination, public involvement
Ashuwillticook Rail Trail	Adams and North Adams, MA	2.5	Environmental permitting and alternatives analysis with multiple bridge structures
Amherst/UMass Bikeway Connector	Amherst, MA	2	Community acceptance, right-of-way, coordination to meet existing path
Norwottuck Rail Trail	Amherst, Northampton, Hadley, MA	9	Community acceptance, multiuse, bridges
Cape Cod Rail Trail (CCRT)	Barnstable, MA	6	Conceptual planning studies
Blackstone River Greenway	Blackstone to Uxbridge, MA	3	Historic railroad bridge rehabilitation
Yankee Doodle Bike Path	Billerica/Bedford, MA	7.5	Major highway crossing, abutter concerns, stormwater management
Cape Cod East-West Bikeway Rail with Trail	Bourne to Dennis, MA	23	Co-existence of a trail with an active railroad
Route 6A Bicycle Accommodation Study	Bourne to Orleans, MA	35	Strategies to accommodate bicycles on scenic byway
Harvard University, Memorial Hall Transportation Study	Cambridge, MA	NA	Pedestrian, bicycle, vehicular conflicts
Bicycle Feasibility Study	Cape Cod, MA	N/A	Regional and local connections, extension of existing rail trail, cost estimating, funding
Chicopee River Bikeway	Chicopee, MA	5	Safety, coordination with other paths
Route 134	Dennis, MA	1	Major highway crossing
Cape Cod Rail Trail (CCRT)	Dennis/Yarmouth, MA	5.2	Bass River crossing
Gages Way Bikeway	Dennis, MA	1	Grade separation, land use, residential impacts
Quequechan River Regional Bicycle Path	Fall River, MA	2.5	Structure design, historic issues
Shining Sea Bikeway	Falmouth, MA	10	Environmental constraints
Old Colony Multipurpose Trail	Mansfield/Norton, MA	6	Equestrian usage
Mattapoisett Bikepath	Mattapoisett, MA	4.7	Sensitive Control Area
Bartlett Road Bicycle Path	Nantucket, MA	.5	Right-of-way constraints
Cliff Road Bicycle Path	Nantucket, MA	1	Rolling terrain
Madaket Bicycle Path	Nantucket, MA	5.2	Community acceptance, right-of-way, and multiuse
Polpis Road Bicycle Path	Nantucket, MA	8.1	Wetlands, archaeological resources, community acceptance

PROJECT	LOCATION	LENGTH (MILES)	CHALLENGES
Surfside Road Bicycle Path Extension	Nantucket, MA	0.5	Multiuse, residential impact
Nantucket Bicycle and Pedestrian Master Plan	Nantucket, MA	N/A	In-town bikeway system
Orange-Athol Shared Roadway Bikeway	Orange-Athol, MA	2.3	Multi-community
Connecticut Riverwalk and Bikeway	Springfield, Agawam, Chicopee, MA		Scenic integrity, wetlands
Swansea Bicycle Path	Swansea, MA	8	MassDOT design compatibility
Watertown Greenway	Watertown, MA	1	Coordination with other transportation improvements and access to the path by abutters
Columbia River Greenway	Westfield, MA	3.2	Safety through downtown, multiple bridge structures
North Dennis Road Bicycle Path	Yarmouth, MA	2.1	Environmental constraints
Yarmouth Regional Bicycle Path	Yarmouth, MA	6	Right-of-way constraints

Amelia Earhart Dam Bikepath Crossing

Somerville, Massachusetts

CLIENT

Massachusetts Department of Conservation and Recreation (DCR)

STATUS

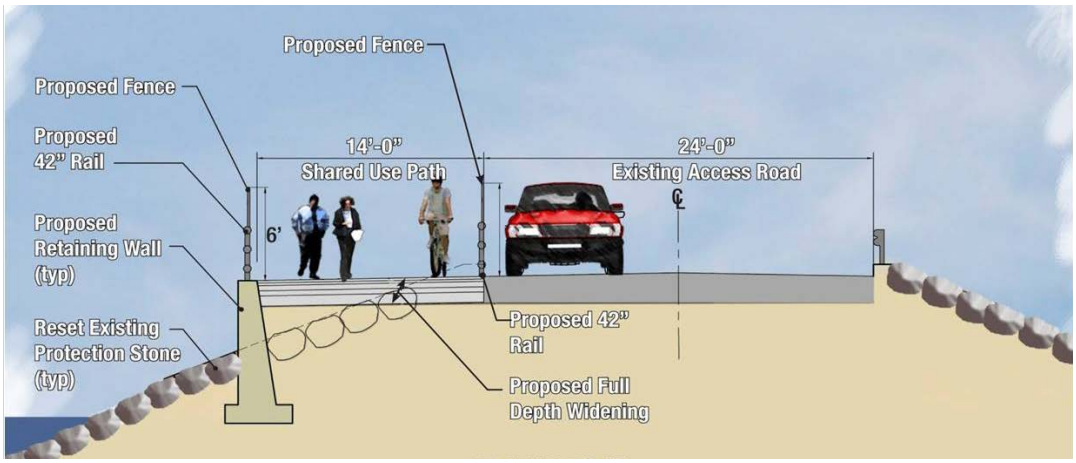
Ongoing

HIGHLIGHTS

Designed bikeway plans

Reviewed dam and performed structural evaluations

Coordinated between multiple state agencies



DCR is working with Exelon Holdings, LLC, to prepare a feasibility study to review alternate crossings of a bike pathway over the Mystic River in Somerville and Everett, as well as the extension of the bikeway from the Draw Seven Park to Elliot Street, along the MBTA maintenance facility in Charlestown and Everett. The new bike path will connect several existing and planned bike paths and green spaces in Medford, Everett, Somerville, and Charlestown. The project will serve as a commuter route to encourage bike traffic on metropolitan area bike paths and help reduce air pollutants from automobile exhaust.

VHB is helping DCR move this project forward through review and structural evaluation of the dam lock system, preparation of four alternative Mystic River crossings, construction drawings of the Draw Seven Park path extension, environmental permitting, geotechnical analysis, agency coordination, and easement plans to determine how to provide safe passage without interrupting operations or interfering with flood and water elevation control. VHB's services include coordination, which requires the MBTA to grant an easement to the DCR, public outreach, as well as design of a public path without encroachment on the MBTA maintenance facility operations.

Designing and Planning the Blackstone River Greenway

Uxbridge, Millville, and Blackstone, Massachusetts

CLIENT

Massachusetts Department of Conservation and Recreation (DCR)

STATUS

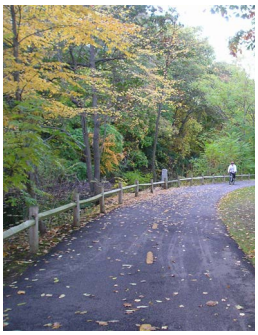
Ongoing

HIGHLIGHTS

The 4.15-mile multiuse trail includes a mix of downtown and undeveloped areas

The route design includes 11 bridges, parking/trailhead areas, scenic vistas, and rest areas

Segment 1 will connect the Massachusetts section of the Blackstone River Bikeway to the Rhode Island section



Segment 1 of the Blackstone River Greenway is a complex section of abandoned railway that DCR wants to transform into a vibrant bikeway for recreation and transportation. The planned 4.15-mile multiuse trail runs from the Rhode Island state border to Route 146A in Uxbridge, MA. The Greenway will be a paved recreational trail along a former rail line, the Southern New England Trunk Trail (SNETT), and travels through a mix of downtown areas and natural settings, including eleven bridges and several trailhead/parking areas. Several bridges have been placed on the National Historic Register. The Greenway is being designed to take advantage of existing features, such as natural views, historic locations, railroad infrastructure, and notable town buildings and destinations. Several alternatives to connect to the planned Rhode Island section of the Bikeway are under consideration.

To achieve its goals, the DCR chose a team led by VHB to create a design that maximizes available funding and focuses on constructability. This team will provide survey, trail design and engineering, structural design, landscape architecture, historic interpretation, and environmental permitting services.

Ultimately, the Blackstone River Bikeway/Greenway will extend 48 miles between Providence and Worcester, linking many of the significant historic features of the Blackstone River Valley National Heritage Corridor.

Columbia Greenway Design

Westfield, Massachusetts

CLIENT

City of Westfield

STATUS

Ongoing

HIGHLIGHTS

The Columbia Greenway project couples historic awareness, downtown revitalization, and open-space connectivity with transportation improvements

The Greenway will help make the City of Westfield a more attractive community by:

- Increasing the travel options into downtown
- Connecting neighborhoods with areas of recreation and commerce
- Bringing to life a currently neglected swath of real-estate
- Continuing to diversify the City's many offerings
- Establishing a gateway to welcome all into the downtown

The City of Westfield is developing a rails-to-trails greenway project along former Pioneer Valley Railroad property between the Southwick town line and Pochassic Street, just north of the Westfield River. The project is located on abandoned track and includes nine bridges. The track travels north-south connecting the Southwick Rail Trail, currently under construction, with the heart of downtown. To the south of downtown, the greenway passes by the site of the former Columbia Bicycle manufacturing site, thereby providing the name: the Columbia Greenway. To help make this greenway plan a reality, the city chose VHB to provide design and bridge improvement services.

The Columbia Greenway project will make use of underutilized and abandoned railroad property and enhance the community of Westfield by meeting transportation needs while also creating opportunity for recreational activities. The project consists of constructing a 3.2-mile multiuse trail and related improvements. The project includes a 12-foot paved trail, rehabilitation of three bridges and replacement of six bridges, pathway lighting, access ramps/walkways, emergency vehicle access points, landscaping, retaining walls, safety rails, drainage, benches, parking, trail safety lighting, and the use of sustainable porous pavement.

The project is being completed in three phases to meet funding constraints. In Phase 1, VHB prepared a concept plan, performed field reconnaissance and preliminary engineering, which included preliminary bridge assessments, original submission of 25% plans and a re-submittal of those plans based on the new requirements in the updated MassHighway Project Development & Design Guide. In Phase 2 VHB is bringing the current 25% design plans to the 75%, 100%, and Plan, Specification and Estimate (PS&E) stages. VHB is also providing type studies, sketch plans and final design documents for the bridge crossings as per MassDOT requirements.

Designing and Planning Segment 7 of the Blackstone River Greenway

Worcester, Massachusetts

CLIENT

City of Worcester

STATUS

Ongoing

HIGHLIGHTS

The 1.3-mile route includes urban and on-street route

The route design blends the vision of a bikeway with the function of a transportation safety improvement project

Segment 7 provides the route's terminus at Worcester's City Common/Union Station, 48 miles from its opposite end in Providence, RI

Located in an urban area, primarily along city streets, Segment 7 of the Blackstone River Bikeway (BRBW) was initially identified in a feasibility study prepared in 1996 with the objective of establishing a facility that separates bicyclists from motor vehicles.

VHB is part of a team chosen by the City of Worcester to develop a conceptual plan for roadway, bridge, and intersection improvements to support the implementation of Segment 7 of the BRBW, based on a basic route previously established as part of an Expanded Environmental Notification Form and subsequent revisions as part of an Environmental Impact Report.

The design will finalize the route of the bikeway and include cross-section details to integrate a separate bicycle facility within an existing urban roadway network. This design will blend the vision of a bikeway with the function of a transportation safety improvement project.

Based on the approved concept plan, the project will be advanced into Preliminary and Final Design for construction by MassDOT. It is currently at the 75%-design stage.

Minuteman Bikeway Extension/Depot Park Design Services

Bedford, Massachusetts

CLIENT

Town of Bedford

STATUS

Ongoing

HIGHLIGHTS

Services included trail design, permitting, and funding support

Multiuse path extended by two miles

Included preparation of design plans for submission to MassDOT

VHB helped the Town of Bedford extend the Minuteman Bikeway—the largest and most heavily used bikeway in the Commonwealth—from its terminus at Depot Park to Concord Road. The project extended the multiuse path by two miles to serve as a recreational and transportation resource. VHB services included trail design, permitting, and funding support. The extension project built off an earlier partnership between VHB and the Town of Bedford to design Depot Park, which provided a landscaped park and sitting area. VHB provided landscape architectural, survey and civil engineering services.

The project included an alternative analysis for an on-road section of the route, located on Railroad Avenue; preparation of a Project Need Form and Project Initiation form to submit to MassDOT for construction funding support; the evaluation of flashing beacons for roadway crossings; and the preparation of design plans for submission to MassDOT.

Designing the Watertown Greenway

Watertown, Massachusetts

CLIENT

Massachusetts Department of Conservation and Recreation (DCR)

STATUS

Design completion 2007

HIGHLIGHTS

Designed a 3,650 linear foot multi-use path along a former rail corridor

Prepared and submitted the Environmental Notification Form

Collaborated with DCR in presenting the project to interested volunteer groups

The Charles River/Alewife Connector multi-use path extends approximately 0.7 miles along the former Boston & Maine railroad corridor. This path is the first phase of a rail-to-trail project to link the Upper Charles River trail to Fresh Pond, and ultimately to the Minuteman Bikeway in Cambridge. This section is a 10-foot wide paved path that begins at School Street and ends at the Arlington Street intersection with Nichols Avenue in Watertown.

VHB helped DCR with design and environmental services including the base plans, preliminary, and final design plans.

VHB also supported DCR by presenting the project to interested volunteer groups, including the Watertown Bike Committee and the Metropolitan Area Planning Council Enhancement Steering Committee. VHB also completed the Environmental Notification Form for submittal to the Executive Office of Environmental Affairs, MEPA Office. Additionally, VHB prepared grant applications for DCR to submit for federal enhancement funds.

Connecticut Riverwalk and Bikeway

Springfield and Agawam, Massachusetts

CLIENT

Pioneer Valley Planning Commission

STATUS

Springfield Portion: Completed 2003

Agawam Portion: Completed 2005/06

HIGHLIGHTS

Furthered revitalization efforts along the Connecticut River through bikeway engineering and design

Awarded a construction grant from the Massachusetts Executive Office of Transportation under the ISTEA enhancement grant program

Completed Springfield portion of project under budget

Once a blighted area, the Connecticut Riverfront has experienced a rebirth in recent years with the Naismith Basketball Hall of Fame expansion, and the opening of a hotel and restaurant. Another component of the Connecticut River revitalization is the Pioneer Valley Planning Commission's (PVPC) planned Riverwalk and Bikeway. PVPC selected VHB to provide engineering and design plans for the proposed six-mile path in Springfield and Agawam.

In addition to the path, VHB's design has included several scenic overlooks, retaining wall systems, a pedestrian bridge over an active railway, informational kiosks, and improvements to the existing Riverfront Park adjacent to the Basketball Hall of Fame. These enhancements include landscaping, lighting, and decorative concrete and walkway pavers.

With the Springfield and Agawam portions completed, plans are underway to link the project with a similar effort in Chicopee. Ultimately, the bike and pedestrian way could extend to West Springfield and Longmeadow, completing a proposed 13-mile route.

Shining Sea Bikeway Extension Phase III

Falmouth, Massachusetts

CLIENT

Town of Falmouth

STATUS

Completed 2009

HIGHLIGHTS

Provided Engineering consulting services for a 6.5-mile section of bikeway

Assisted the Town and MassHighway in community outreach to satisfy numerous project stakeholders

The Shining Sea Bikepath extension from Carlson Lane to County Road in North Falmouth extends the current trail an additional 6.5 miles through some of the most environmentally sensitive areas on Cape Cod. This additional section of bikeway will provide connectivity between County Road in North Falmouth and the Ferry Terminal in Woods Hole, an overall distance of approximately 10 miles. The bikeway follows the abandoned Old Colony railroad line and traverses the Great Sippewisset and Little Sippewisset Marshes providing views of Buzzards Bay.

VHB provided the Town of Falmouth civil engineering support to design the bikeway's vertical and horizontal geometry, modifications to drainage, bikeway intersections with local streets, landscaping, and bikeway amenities. VHB designed structural modifications to a small bridge that traverses an open 4-foot wide waterway connecting cranberry bogs adjacent to each side of the proposed path along with numerous retaining walls along the bikeway alignment. VHB also provided environmental consultation and coordination with the Falmouth Conservation Commission and the Massachusetts Division of Fisheries and Wildlife as the project necessitated the filing of a Notice of Intent and the relocation of a rare plant species and protection for the endangered Eastern Box Turtle.

VHB also assisted the Town and MassHighway with community outreach efforts in the form of several meetings with the general public, concerned citizens, the Falmouth bikeway committee, Town and State officials to help bring this project to a successful completion.

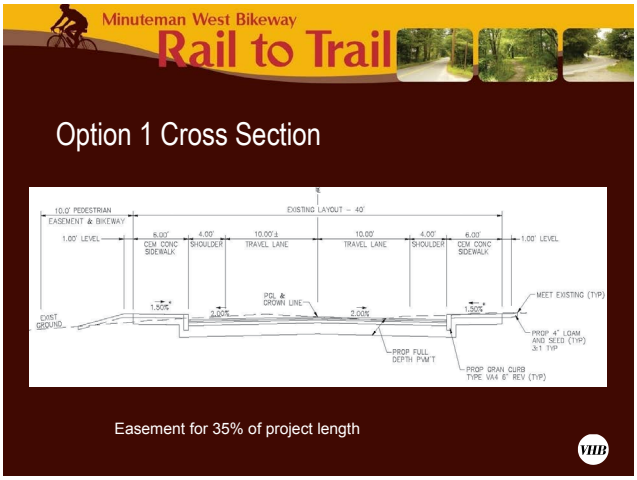
Current Projects under review by MassDOT and/or Boston MPO

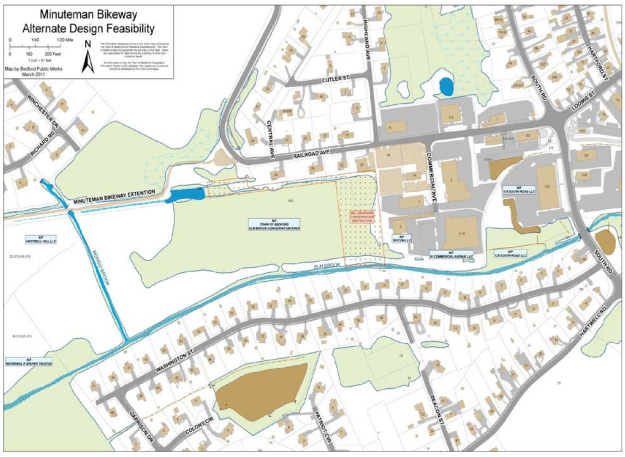
VHB company-wide has many projects currently under review by MassDOT. The following list is a representative sample of the projects.

PROJECT NAME	MASSDOT PROJECT NUMBER	PROJECT TYPE	CONSTRUCTION COST
Middlesex Turnpike Ph 3	29491	Roadway	$4,000,000
Amesbury Riverwalk	606669	Bikepath	$2,000,000
I-93 Lot 5	607827	Parking Lot, Traffic Signals, Park and pedestrian amenity areas	$6,400,000
Comm Ave Bridge Superstructure Replacement Design Build	606541	Footprint bridge replacement over the Mass Turnpike	$45,000,000
Route 1A at Prospect St & Washington St in Norwood	606130	Intersection Improvements	$3,500,000
Montvale Ave in Woburn	604935	Roadway Improvements	$2,100,000
Springfield I-91 Viaduct	607731	Viaduct Deck Replacement	$189,200,000
Reconstruction of Main St. (Rte. 30) in Southborough	604989	Roadway Improvements	$6,400,000
Route 20 at Concord Rd. in Marlborough	604231	Intersection Improvements	$1,700,000
Reconstruction of Rte. 85 (Maple St.) in Marlborough	604810	Roadway Improvements	$5,000,000
Reconstruction of Rte. 20 (E. Main St.) in Marlborough	604811	Roadway Improvements	$2,300,000
Main Street (Route 28), Dennis —25%	606707	Streetscape & Roadway Improvements	$3,750,000
Main Street (Route 58), Carver - PS&E (has been advertised)	606007	Streetscape & Roadway Improvements	$5,000,000
Cape Cod Rail Trail Extension—Phase 1 in Dennis and Yarmouth PS&E (advertised)	604488	Shared Use Path	$6,600,000
Cape Cod Rail Trail Extension—Phase 2 in Dennis and Yarmouth 100%	607571	Shared Use Path	$2,000,000
In-Town Bike Path—Nantucket PS&E	606433	Shared Use Path	$900,000
Amesbury - I-495 over Riverway Bikeway	603682	Bridge replacement over bikeway	$7,800,000

Sample Material

The following sample material is indicative of the presentations presented by VHB.





The Great Road - Master Plan
Bedford, MA

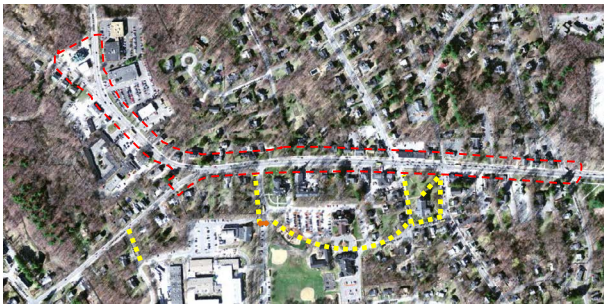
Presentation Outline

- Welcome & Purpose of this Meeting
- Master Plan Process
- Summary of Past Meetings
- Project Program and Goals
- Traffic Analysis
- Streetscape and Transportation Concept Plan
- Next Steps
- Questions/Comments

The Great Road - Master Plan
Bedford, MA

Site Analysis

Town Campus Pedestrian Connection



- Consider reestablishing historic diagonal walk on Common
- Examine feasibility of a sidewalk along South Road, Elm
- Examine feasibility of crosswalk from Tot Lot to Library

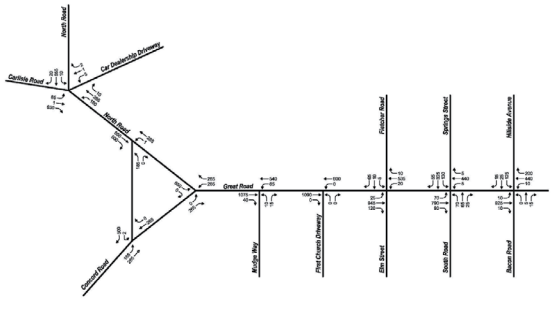
The Great Road - Master Plan
Bedford, MA

Traffic Analysis and Alternatives

Existing Conditions and Challenges

The Great Road - Master Plan
Bedford, MA

Morning Peak Hour Traffic Volumes

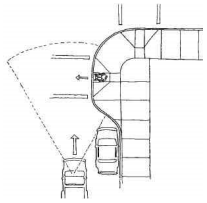


October 2010

The Great Road - Master Plan
Bedford, MA

Traffic Calming Considerations

- Roundabout – not geometrically feasible at Wilson Park
- Curb extensions or "bump outs"
- Highly visible crosswalk warnings



The Great Road - Master Plan
Bedford, MA

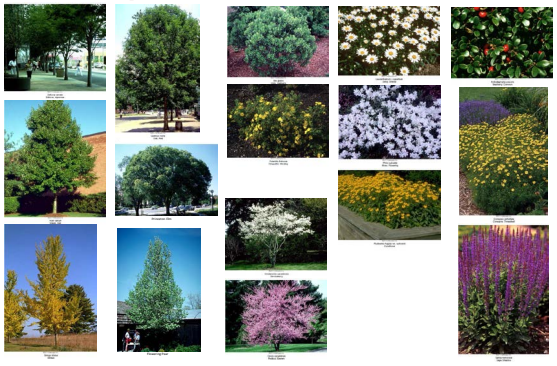
Wilson Park Alternative – Option 2

Minor geometric modifications with traffic signal

- Accommodates peds/bikes
- Improves traffic operations (new traffic signals)
- Minor land impact to Wilson Park
- No private property impacts
- Moderate cost

The Great Road - Master Plan
Bedford, MA

Streetscape Materials Plants



The Great Road - Master Plan
Bedford, MA

The Great Road - Concept Plan

Bruce Freeman Rail Trail

Town of Concord
February 8, 2007

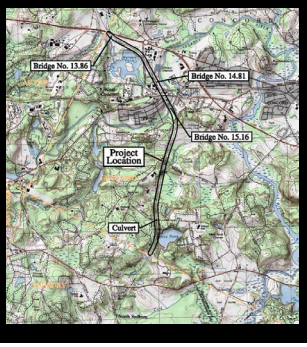
Bruce Freeman Rail Trail

Our Team…Getting Projects Built in Massachusetts…

- Norwottuck Rail Trail (Northampton-Hadley-Amherst)
- Connecticut Riverwalk (Agawam-Springfield-Chicopee)
- Amherst/UMass Connector (Amherst)
- Old Colony Trail (Mansfield)
- Swansea Bicycle Path (Swansea)
- Gage's Way Bikeway (Dennis)
- Nantucket Path System (26 miles)

Bruce Freeman Rail Trail

Project Overview



Bruce Freeman Rail Trail in Concord

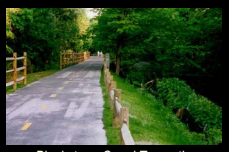
- 3.5 miles long
- Includes rail trail and connections with local roads
- In cooperation with Acton and Sudbury

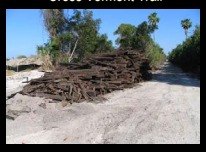
Bruce Freeman Rail Trail

Design Issue – Trail Surface and Width


Acadia Carriage Roads

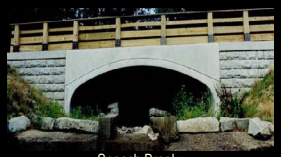

Cross Vermont Trail


Blackstone Canal Towpath


Sarasota Rail Trail

Bruce Freeman Rail Trail

Team Experience – Structures


Sneech Brook


Willow Way


Pratt Dam Bridge


Ashton Bridge

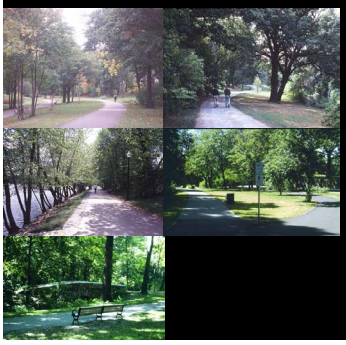
Bruce Freeman Rail Trail

Environmental Impacts, Mitigation and Enhancements

- Wildlife and Plants
  - Wildlife Habitat
  - Rare Species
  - Invasive Species
- Wetlands
  - Vernal Pools
  - Water Quality
- Historic Resources
- Contaminated Materials

Bruce Freeman Rail Trail

Team Experience-Emerald Necklace Parks



- Design and restoration within the context of an historic landscape
- Riverdale Parkway in Olmsted Park – incorporation of a bikeway system in historic park
- Jamaica Pond – Rehabilitation and enhancement of pedestrian paths and new bike paths

City of Amesbury - Lower Mill Yard

Illustrative Master Plan

6

References

6

6. References

The following table highlights client references from projects where VHB has provided similar services to those needed for successful completion of the Sudbury project. We encourage you to contact these references to discuss the quality of our work.

CONTACT COMPANY FIRM NAME	ADDRESS	CONTACT INFORMATION
Dan Driscoll *Director of Recreational Facilities Planning*	Department of Conservations and Recreation 251 Causeway Street , Suite 900 Boston, MA 02114	617-626-1438 dan.driscoll@state.ma.us
Arthur Frost *Project Development Engineer, District 3*	Massachusetts Department of Transportation 403 Belmont St. Worcester, MA 01604	508.929.3837 Arthur. Frost@ state. ma. us
William Sedewitz, PE *Chief Engineer*	Town of Framingham 110 Western Avenue Framingham, MA 01702	508.532.6012 wrs@ framinghamma. gov

7

Competing Commitments

7

7. Competing Commitments

All members of the project team are committed to providing the necessary resources to meet the requirements of this project for the life of the contract. A review of current workloads from all team members indicates that our personnel will have availability to be dedicated to this project. Furthermore, should unanticipated project demands arise, we are committed and have the ability to draw upon more than 350 in-house, Massachusetts-based personnel to make necessary resources available to meet the project scope and schedule.

8

Assumptions

8

8. Assumptions

In the development of the scope of work for the 25% design, VHB has made various assumptions regarding the design development, level of proposed improvements and extent of professional services. The following is assumed:

- The town will obtain ground points and the digital terrain model from Atlantic Engineering.
- The town will provide roadway traffic counts and Motor Vehicle Crash Reports.
- Up to 10 abutter meetings will be necessary.
- VHB will attend up to two Boston MPO and MassDOT meetings to discuss the Transportation Improvement Program.
- Traffic signal equipment and foundations will be per current MassDOT Standards.
- VHB will rely on the completeness of record property line, ROW and abutters information based on the Surveyor of Record Base Plan provided to VHB by the Town of Sudbury
- VHB will rely on the Town of Sudbury providing Horizontal and Vertical control, completed by the Surveyor of Record in 2008.
- VHB will rely on the Town of Sudbury providing the Surveyor of Record CAD file that includes survey point locations and a DTM surface.
- VHB will utilize GPS locations taken by VHB Environmental Scientist 25' and greater beyond the existing ROW.
- VHB will update the existing CAD Basemap to MDOT Survey standards, but will not perform additional survey if the original base mapping does not meet MDOT field survey standards.

- Town will get permission to abutting properties that require survey & wetland flagging.
- VHB is assuming that the original momumentation (traverse points and bench marks) that was set by Atlantic Engineering has not been removed from the trail corridor, and as such, re-setting it is not included in this proposal.
- The town will pay for police details for field reconnaissance. The cost for police details are not included in the fee for this proposal.

9

Certificates

9

9. Certificates

This section includes the completed required forms:

- Attachment E—Certificate of Taxes/Tax Attestation and Certificate of Non-Collusion
- Certification of Insurance Coverage

ATTACHMENT E

CERTIFICATE OF TAXES/TAX ATTESTATION

Pursuant to M.G.L. Chapter 62C, Section 49A, I certify under penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required by law.

04-2931679
Social Security Number, or
Federal Identification Number

Vanasse Hangen Brustlin, Inc.
Signature of Individual, or
Corporation Name

By: _____, CLERK
Corporate Officer & Title (if applicable)
Robert M. Dubinsky, PE, LEED AP
Senior Vice President

AFFIX CORPORATE SEAL

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid, or 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.

Vanasse Hangen Brustlin, Inc.
Signature of Individual, or
Corporation Name

By: Francis S. O'Callaghan
~~Corporate Officer~~ & Title (if applicable)
Francis S. O'Callaghan, PE
New England Regional Manager

AFFIX CORPORATE SEAL

OP ID: PB

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 05/22/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Poole Professional Ltd. 107 Audubon Rd. #2, Ste. 305 Wakefield, MA 01880 Christopher A. Poole	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: PRODUCER CUSTOMER ID #: VANAS-1
INSURED Vanasse Hangen Brustlin, Inc.; VHB Engineering, Surveying & Landscape Arch.,PC, Vanasse Hangen Brustlin,LLC, VHB Eng.,NC, PC P. O. Box 9151 Watertown, MA 02471	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Travelers Indemnity Co. — 25658 INSURER B : Travelers Indemnity Co America — 25666 INSURER C : Safety Insurance Company — 39454 INSURER D : Charter Oak Fire Ins. Co. — 25615 INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR			680-2611L561-IND-14	05/01/2014	05/01/2015	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person)	$ 1,000,000 $ 1,000,000 $ 10,000
	X Contractual liab.			680-4E545804-IND-14	05/01/2014	05/01/2015	PERSONAL & ADV INJURY	$ 1,000,000
	X incl.BlanketWaive			680-4E547521-IND-14	05/01/2014	05/01/2015	GENERAL AGGREGATE	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
								$
C	AUTOMOBILE LIABILITY ANY AUTO			1501873 RENEWAL POLICY	06/13/2014	06/13/2015	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ALL OWNED AUTOS			1501873	06/13/2013	06/13/2014	BODILY INJURY (Per person)	$
B	X SCHEDULED AUTOS			BA-2044L84A-14-GRP	05/01/2014	05/01/2015	BODILY INJURY (Per accident)	$
A	X HIRED AUTOS			BA2067L575-14-GRP	05/01/2014	05/01/2015	PROPERTY DAMAGE (PER ACCIDENT)	$
	X NON-OWNED AUTOS							$
								$
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DEDUCTIBLE X RETENTION $ 10,000			UP0D314787	05/01/2014	05/01/2015	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000
								$
								$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		XVMPNUB5825Y49-6-14	05/01/2014	05/01/2015	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Prof. Office Packa			680-2611L561-IND-14 INSURANCE IS PRIMARY	05/01/2014	05/01/2015	Valuable Records	3,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

PROPO-1

For Proposal Use Only

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

OP ID: PB

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 07/14/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Poole Professional Ltd. 107 Audubon Rd. #2, Ste. 305 Wakefield, MA 01880 Christopher A. Poole	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: PRODUCER CUSTOMER ID #: VANAS-1
INSURED Vanasse Hangen Brustlin, Inc. VHB Engineering, Surveying Landscape Arch., PC Vanasse Hangen Brustlin, PC VHB Eng. NC,PC P. O. Box 9151 Watertown, MA 02471	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : XL Specialty Insurance Company — 37885 INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$
	COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	CLAIMS-MADE OCCUR						MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$
	POLICY PRO-JECT LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$
	SCHEDULED AUTOS						PROPERTY DAMAGE (PER ACCIDENT)	$
	HIRED AUTOS							$
	NON-OWNED AUTOS							$
	UMBRELLA LIAB OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$
	DEDUCTIBLE							$
	RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						WC STATU-TORY LIMITS OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) N/A						E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Arch./Eng. E&O			DPR9716802	07/19/2014	07/19/2015	EachClaim	1,000,000
	incl Pollution Lia			FULL PRIOR ACTS			Aggregate	1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

For professional liability coverage, the aggregate limit is the total insurance available for all covered claims presented within the policy period. The limit will be reduced by payments of indemnity and expenses.

CERTIFICATE HOLDER

PROPO-1

For Proposal Use Only

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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Appendix A - Team Resumes

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Appendix A — Team Resumes

In this Appendix you'll find resumes for the follwoing team members:

- Trish Domigan, PE
- Tracie Lenhardt, PE, ENV SP
- Don Cooke, PE, PTOE
- Bill DeSantis, PE, LCI
- Craig Robertson
- Gene Crouch
- Erin Thompson, PE, IMSA III

Patricia G. Domigan, PE

Principal-in-Charge; Director of Massachusetts Municipal Services

Ms. Domigan, Director of Massachusetts Municipal Services, has extensive experience helping communities in applying for state and federal grants for the design and construction of infrastructure projects, planning projects, and infrastructure design development.

27 years of professional experience

MassCentral Rail Trail, Wayside Branch, Waltham to Berlin, MA
Ms. Domigan managed the planning effort for the Wayside Branch of the Mass Central rail Trail project. Working with DCR, VHB lead the team to develop a plausible 19 foot wide development corridor along 23 miles on the MBTA owned Mass Central right of way, in the towns of Waltham, Weston, Sudbury, Wayland, Bolton, Stow, Hudson and Berlin. Using the location of this development corridor, VHB then evaluated the construction of a multiuse trail in terms of construction costs, environmental impacts, right of way, and construction phasing, and prepared an Expanded Environmental Impact Report that DCR submitted to MEPA.

Amelia Earhart Dam Bike Path Crossing, Somerville, MA
Ms. Domigan worked on a project in which the DCR worked with Excelon Holdings, LLC, to prepare alternate crossings of a bike pathway over the Amelia Earhart Dam in Somerville. The project included the design of a conceptual off-road path from Draw 7 park through the MBTA maintenance facility in Charlestown. VHB was retained to complete this project, which included the review of the dam lock system to determine how to provide safe passage without interrupting operations.

Watertown Bike Path, Watertown, MA
Ms. Domigan worked with the DCR to design a bike path on an abandoned railroad right-of-way, from School Street to Grove Street. The alignment, which is behind the Arsenal Mall, crosses the Nichols Street intersection with Arlington Street, a five-legged intersection with high traffic volumes.

Blackstone River Greenway, Segment 1, Blackstone, Millville, and Uxbridge, MA
Ms. Domigan managed the design of Segment 1 of the Blackstone River Greenway, in the towns of Blackstone, Millville and Uxbridge, MA. Ms. Domigan worked with the DCR to design the 3.5 mile corridor to meet the Lieutenant Governor's vision to build the Blackstone River Greenway from Rhode Island to the City of Worcester. This segment, the southernmost section of the greenway included the rehabilitation of 6 former railroad bridges, the construction of 4 miles of greenway, the re-installation of a bridge over Route 126, in Blackstone, and a underpass under Church Street. The project also included the rehabilitation of the Triad Bridge in Millville. This 3 level bridge crosses over the active Providence and Worcester railroad as well as the Blackstone River. The greenway has been designed to be the top level of the bridge.

The Great Road Master Plan, Bedford, MA
Ms. Domigan was the transportation task manager for the Great Road Master Plan in Bedford when the Town of Bedford retained VHB to prepare a Master Plan for The Great Road and North Road, from Hillside Avenue to Carlisle Road. The project included a series of public meetings and charrettes with the community to solicit input on creating a sense of place with complete streets ideologies along The Great Road within the center of town. Traffic analysis was completed to determine the lane configuration and if key intersection warranted traffic signal installations. Pedestrian crossing options

Patricia G. Domigan, PE (continued)

including HAWK signals and flashing beacons was also evaluated along the corridor. Roadway cross section and intersection alternatives were presented to the town at Wilson Park, where The Great Road intersects with Concord Road and North Road.

Hamilton Canal District Downtown Revitalization, Lowell, MA
Ms. Domigan is Project Manager for this multiphase project focusing on design of street, sidewalk, lighting, and landscape improvements. It included the evaluation of vaults that exist under the sidewalks in the Central Business District to determine sidewalk improvements and overall project reconstruction requirements. Ms. Domigan developed a preliminary design plan for review by the city to update the pedestrian paths to meet Americans with Disabilities Act (ADA) and Architectural Access Board (AAB) requirements, as well as traffic signal updates to the intersection of Market Street with Central Street.

Lower Millyard Redevelopment Project, Amesbury, MA
Ms. Domigan was retained by the City of Amesbury to assist in the development of the Lower MIllyard section of Amesbury. The cities vision was to create a vibrant commercial district on a blighted contaminated area of the community. The project included the reconstruction of Elm Street and Water Street, the rehabilitation of the Water Street Parking Garage, and the design of the Amesbury Riverwalk. Other features include the design of Heritage Park, an open space feature of the Lower Millyard at the confluence of the Powow River with the Back River. Ms. Domigan managed the design effort of the redevelopment initiative, met with the Brownfield Support Team, and coordinated with project abutters and utility companies.

Middlesex Turnpike Transportation Improvements, Bedford, Burlington, and Billerica, MA
For the Town of Bedford, Ms. Domigan managed the design and land acquisitions for the four-mile corridor that extends from Route 62 in Burlington to Manning Road in Billerica. The effort included the completion of construction documents in accordance with Massachusetts Department of Transportation standards and policies; negotiation of land takings for 65 parcels adjacent to the project; oversight of a hydrologic analysis for the Shawsheen River; management of the environmental permitting process, including the preparation of a variance of the Wetland Protection Act; public presentations; and public and agency coordination. The design of the $16.5 million dollar project included expanding the roadway cross-section from two lanes to four lanes, the construction of a new connection roadway from the Middlesex Turnpike to Route 62, the design of 7 signalized intersections, and the design of waterlines, landscaping, and drainage design in conformance with the Massachusetts stormwater policy.

EDUCATION

- BS, Civil Engineering, University of Massachusetts, 1987

PROFESSIONAL REGISTRATIONS

- Professional Engineer (Civil) MA 1993

AFFILIATIONS AND MEMBERSHIPS

- American Society of Civil Engineers
- American Public Works Association
- Boston Society of Civil Engineers
- Essex County Highway Association
- Massachusetts Highway Association
- Worcester County Highway Association
- Norfolk-Bristol-Middlesex Highway Association

Tracie A. Lenhardt, PE, ENV SP

Project Manager/Multiuse Path Design

Ms. Lenhardt is a member of VHB's Transportation Group. She has extensive experience with the design of intersection and corridor reconstruction, horizontal and vertical alignments for roadways and bike paths, closed drainage systems, the preparation of design plans, specifications, quantity and cost estimates, and MassDOT permitting.

15 years of professional experience

DCR, Blackstone River Bikeway, Segment 1, Millville/Blackstone, MA
For the Massachusetts Division of Conservation and Recreation (DCR), Ms. Lenhardt is providing engineering design services for Segment 1 of the Blackstone River Bikeway. The project includes 3.3 miles of greenway and 11 bridges.

Minuteman West Bikeway, Bedford, MA
Ms. Lenhardt helped prepare a design feasibility study for 1.95 miles of multiuse path for the Town of Bedford and prepared the Transportation Enhancement Application for construction funds for a multiuse path that extends along the former Boston and Maine Railroad Reformatory Branch alignment through a heavily wooded area of the town. The path was also extended along Rail Road Avenue to have a direct connection to the northerly terminus of the Minuteman Bikeway in Lexington.

Route 8/Friend Street Intersection Improvements, Adams, MA
As the Project Engineer, Ms. Lenhardt developed the 25% design for a single-lane roundabout at the intersection of Columbia Street (Route 8)/ Friend Street and Renfrew Street for the Town of Adams.

MassDOT, Massachusetts Avenue Streetscape Improvements, Boston, MA
Ms. Lenhardt is the Task Manager who worked with the City of Boston and the Massachusetts Department of Transportation (MassDOT) to develop the bid documents for the dynamic, vibrant, historic Symphony Hall area of Boston. The project will improve accommodation for vehicles, pedestrians, and bicyclists while providing streetscaping and urban design treatments to Massachusetts Avenue. The work also includes pavement resurfacing, minor pavement widening, new pavement markings, signing, street lighting, new traffic control signals, and repairs to the Massachusetts Avenue Bridge over Huntington Avenue (Route 9). The combination of businesses (including the MBTA), residential neighborhoods, bicycle advocacy groups, and historic and educational institutions required significant public participation and outreach.

Washington Street/ Upland Road (Route 1A) at Prospect Street, Norwood, MA
As Project Engineer, Ms. Lenhardt worked with the town of Norwood to develop 25% design documents for the installation of a new traffic signal system and roadway geometric modifications at the intersection of Route 1A at Prospect Street, Washington Street, and Fulton Street. Improvements were limited to roadway and sidewalk reconstruction, limited utility work, installation of signalized traffic control, signing and pavement markings. Also part of this project was retaining wall design and some flood plain mitigation.

Parkhurst Road, Chelmsford, MA
Ms. Lenhardt is Task Manager working with the Town of Chelmsford in the development of the 100% design plans for the realignment of Smith Street at its terminus with Parkhurst Road. Due to the

Tracie A. Lenhardt, PE, ENV SP (continued)

substandard horizontal and vertical geometry and sight distance at the intersection, both roadways will be altered. The profiles on both Parkhurst Road and Smith Street are proposed to be altered from its original elevation. The horizontal geometry of this intersection is proposed to be modified from a "Y" type intersection to a "T" intersection resulting in Smith Street intersecting with Parkhurst Road closer to a 90-degree angle. The project will include full depth pavement construction, sidewalk construction, a new closed drainage system, and a retaining wall design.

State Street Corridor Improvement Project, Springfield, MA

Ms. Lenhardt was the Project Engineer for the design of the State Street corridor, a busy 3.2-mile urban major corridor that encompasses businesses, residences, parks, cultural amenities, educational institutions, and major historical assets. The improvements along this corridor included the reconstruction of several intersections, the upgrade and coordination of the traffic signal systems, and intersection and roadway improvements aimed to increase pedestrian and bicycle safety. The project also included streetscape improvements throughout the corridor.

Concord Street (Route 126), Framingham, MA

Ms. Lenhardt worked on a corridor study for a busy roadway through Framingham. The work, which entailed reconstruction of approximately 1.6 miles of roadway, involved pavement investigation and recommendations, environmental permitting, and construction bidding on behalf of the town.

Route 138—Turnpike Street/Washington Street, Canton, MA

For the Town of Canton, Ms. Lenhardt was the Project Engineer who worked with the Massachusetts Department of Transportation to provide vehicular and pedestrian safety improvements to a 0.5 mile section of roadway. Design considerations included maintaining and improving the existing drainage system and network of underground culverts, maintaining access to the numerous businesses and residences located along the corridor through the project construction and the installation of a continuous sidewalk along this corridor, which begins at the Randolph Street and terminates at Washington Street.

EDUCATION

- BS, Civil Engineering, Northeastern University, 1999

PROFESSIONAL REGISTRATIONS

- Envision™ Sustainability Professional 2013
- Professional Engineer (Civil) MA 2008

AFFILIATIONS AND MEMBERSHIPS

- American Society of Civil Engineers
- Boston Society of Civil Engineers

Donald J. Cooke, PE, PTOE

Technical Advisor; Managing Director for Transportation Systems

Mr. Cooke is VHB's Managing Director for Transportation Systems. He is a highly experienced transportation engineer with a particular focus on managing significant urban transportation improvement projects.

30 years of professional experience

Symphony Area Streetscape Improvements Boston, MA
Under contract with the City of Boston, Mr. Cooke was Project Manager for development of conceptual level roadway, signal and urban design improvements in the Symphony Hall area. He managed alternative development and refinement, as well as participated in considerable public participation with impacted area residents and stakeholders. He oversaw work on improvements that include pedestrian amenities such as countdown timers, audible pushbuttons, ADA-approved handicap facilities; traffic calming features, such as roadway tables and neckdowns; and transportation enhancements including the redesign of 12 locations and multiple traffic signals.

Gateway East/Route 9 Jughandle Transportation Study, Brookline, MA
For the Town of Brookline, Mr. Cooke oversaw a transportation circulation analysis for the area of Walnut Street and the Juniper Street jughandle. This two-phase project was to improve pedestrian access across Route 9 in Brookline Village. The first phase included the completion of a feasibility study to determine whether an existing (condemned) pedestrian overpass can be demolished and replaced with an at-grade signalized pedestrian crossing of Route 9. The study evaluated how the traffic signals along Route 9 would be modified and how the existing jughandle could be altered to better facilitate connectivity and traffic flow. The study also made recommendations on reducing the cross-section of Route 9 and incorporating additional landscaping features. Phase 2 included the development and submission of design plans for the recommended improvements to MassDOT. Throughout the process, public input and coordination was ongoing to develop a plan supported by a majority of town residents.

MassDOT, WeMove Massachusetts Statewide Multimodal Plan, Massachusetts
Mr. Cooke is assisting in developing a transparent, data- and needs-driven process for allocating MassDOT limited resources toward a long-range transportation plan. The primary task completed to date has been interviewing staff from MassDOT and from cooperating agencies regarding best practices and areas that need improvement when determining project funding. From these interviews, recommendations will be made as to how to shape the decision process around different funding levels and across transportation modes, as well as how to integrate the decision points with a policy overlay that appropriately reflects the priorities of MassDOT and its key stakeholders.

Municipal On-Call Traffic Engineering Services, Massachusetts
Mr. Cooke has managed on-call traffic engineering contracts for the City of Lynn and Town of Milton, as well as individual projects in numerous communities, including Everett, Taunton, Melrose, Haverhill, Sharon, and Webster. He has developed transportation and traffic improvements for projects ranging from isolated intersections to coordinated signal systems along arterial streets.

Donald J. Cooke, PE, PTOE (continued)

DCR, On-Call Traffic Engineering Services, Massachusetts
Under an on-call traffic engineering contract with the Metropolitan District Commission (now the Division of Conservation Resources), Mr. Cooke managed all aspects associated with the development of contract documents for roadway and traffic improvements, and conducted general transportation and traffic studies and evaluations along MDC roadways and parkways.

MTA, On-Call Transportation Services, Massachusetts
Mr. Cooke managed a three-year, $500,000 on-call transportation contract with the Massachusetts Turnpike Authority (now the Massachusetts Department of Transportation). Assignments included projects such as development of temporary traffic signal and traffic managements plans to support construction activities, interchange signage and pavement marking plans, CA/T ramp modifications, GIS and CADD support. Original three-year contract expired in 2007 and has since been renewed yearly.

Worcester Regional Mobility Study, Central Massachusetts
Under contract with the Central Massachusetts Regional Planning Authority, Mr. Cooke served as Project Manager for a comprehensive transportation master planning effort related to identifying improvement alternatives to enhance mobility in the Central Massachusetts region. The study identified 21 improvement projects that ranged from major infrastructure projects to localized roadway, intersection and multimodal upgrades. The included a significant public outreach effort and coordination with an established Technical Committee and Study Advisory Group. The study incorporated transportation mobility, environmental, socio-economic and economic development considerations and culminated in the development of a Management and Operations plan serving as a road map for implementation of recommended alternatives.

MassDOT, Active Risk Management—Accelerated Bridge Program, Charles River Basin, Massachusetts
Mr. Cooke served as the Transportation Task Manager assisting MassDOT in evaluating accelerated bridge program projects within the Charles River Basin around Boston. He oversaw the development of a sub-area travel demand model detailing the basin and managed efforts to identify and analyze intersection and roadway operational impacts associated with various construction staging and sequencing alternatives for the Boston University Bridge, Longfellow Bridge, Anderson Memorial Bridge, Craigie Drawbridge, and Western and River Street Bridges. He also evaluated vehicle hours traveled (VHT) and vehicle miles traveled (VMT) metrics and established related user costs associated with projected increases in congestion.

EDUCATION

- BS, Civil and Environmental Engineering, Clarkson University, 1985
- Graduate Coursework, Transportation Engineering Courses, Clarkson University

PROFESSIONAL REGISTRATIONS

- Professional Engineer (Traffic) MA 1993
- Professional Traffic Operations Engineer 2000

William DeSantis, PE

Technical Advisor and QA/QC Reviewer; Corporate Director Bicycle Transportation Planning & Design

Mr. DeSantis is the corporate leader of VHB's Bicycle/Pedestrian and Transportation Enhancement practice. As technical advisor on numerous bicycle/pedestrian and enhancement projects in the eastern United States, he has an active role in the planning, design and construction of bicycle facilities in eleven states. Mr. DeSantis is a technical member of the NCUTCD Bicycle Technical Committee, a member of the League of American Bicyclists, a League Cycling Instructor, a National Mountain Bike Patrol Instructor, a member of the Blackstone River Bikeway Patrol, and a bicycle commuter.

35 years of professional experience

Blackstone River Bikeway, MA

Mr. DeSantis is Project Manager leading VHB's efforts for the Blackstone River Valley Chamber of Commerce and the Blackstone River Valley National Heritage Corridor Commission feasibility studies for alternative alignments of the Blackstone River Bikeway in the towns of Millbury, Grafton, Northbridge, Uxbridge, and the city of Worcester. Feasibility studies include outlining alternate routes for the bikeway alignment, determining preliminary impacts, developing comparative evaluation scores and generating study-level construction estimates for various alignments. The studies include segments of on-road bicycle routes as well as off-road shared use paths. Mr. DeSantis also served as engineering task manager for preparation of an Expanded Environmental Notification Form for the Bikeway for the Massachusetts Highway Department (now, the Massachusetts Department of Transportation). VHB was selected by the Massachusetts Department of Conservation and Recreation for design of Segment 1 of the Bikeway in Blackstone, Massachusetts, which includes a surviving portion of the Blackstone Canal.

Blackstone River Bikeway, Pawtucket to North Smithfield, RI

Mr. DeSantis was Project Manager for the Blackstone River Bikeway, a 20-mile-long bike path from Pawtucket to North Smithfield. The project was a joint effort between the Rhode Island Department of Environmental Management (RIDEM) and the Rhode Island Department of Transportation (RIDOT). The Blackstone River Bikeway is a major transportation connection through the population centers and the cultural, natural, and historical resources of the Blackstone River Valley National Heritage Corridor and is being designed to be compatible with these resources. As Project Manager Mr. DeSantis was responsible for coordination of all project activities including bikeway design, bridge design, landscape architecture, railroad signal design, environmental permitting, historic interpretive design, GPS and engineering surveys, aerial photogrammetry, and community involvement. Construction of the first portion, a 3-mile segment in Lincoln, was completed in October, 1998, and the next segment, a 3-mile rail-with-trail was completed in 2002. A new crossing of the Blackstone River in the historic mill village of Ashton was completed in 2003. Construction of Segment 4B in Cumberland and Lincoln was completed in the fall of 2004. Segment 4B includes two crossings of the Blackstone River and clean-up of a portion of an EPA Superfund site. Segments 7A & 7B, an additional 3-mile rail-with-trail, were completed in 2008. Segment 7C was incorporated into the City of Woonsocket River's Edge Recreation Complex, which capped an old landfill and construction a trail head facility and athletic fields. Segment 2 in Providence provided 3 miles of bicycle lanes on Blackstone Boulevard, a historic Olmstead parkway landscape. To date, 14 miles of the bikeway are open and in operation.

William DeSantis, PE (continued)

Providence Bike Network On-Road Bicycle Plan, Providence, RI
Mr. DeSantis was Project Manager for the development of an on-road plan that connects the regional bicycle facilities that enter Providence, including the East Bay Bike Path, the Harbor View Trail, the Washington Secondary Corridor, the Northwest Bike Trail, and the Blackstone River Bikeway. The 56-mile on-road system facilitates inter-neighborhood connections and provides a downtown hub for bicycle travel. Mr. DeSantis oversaw preliminary and final designs for each roadway and projected cost estimates to implement the highest level of on-road bicycle accommodation possible within the scope of the proposed improvements. To accomplish this, he analyzed traffic volume and crash data to guide selection of appropriate bicycle treatments and developed a strategy to implement and fund the on-street bicycle system.

Fall River Multi-Use Bicycle Trail, Quequechan River Regional Bicycle Path, Fall River, MA
Mr. DeSantis was Project Manager for engineering of a 2.47-mile completely off-road bicycle path along an abandoned railroad line to begin at a city park, Britland Park, and end at the town line of Westport, Massachusetts. Responsibilities include engineering design and construction contract preparation services for this off-road (Class I) bicycle path and five timber bridges, survey and permitting. Services include material testing, complete inspection and the design of cost-effective rehabilitation of each water-crossing bridge structure, bidding assistance, and resident engineering services during construction.

Mattapoisett Multiuse Bicycle Path, Mattapoisett, MA
For the town of Mattapoisett, on Buzzards Bay in southeastern Massachusetts, Mr. DeSantis was Project Manager for the final design and construction of a 4.7-mile multiuse bicycle trail on a former railroad bed. The majority of the bicycle path is an off-road paved bicycle path (Class I) on former railroad bed, with an adjacent equestrian trail. Portions of the railroad right-of-way serve as a sewer line corridor, which required careful design. The project was phased due to permitting issues regarding building a bike path along a barrier beach, crossing a salt marsh, and coordinating the design with a YMCA camp. This project, which was part of the Southeast Regional Planning & Economic Development District regional bike master plan, aimed at promoting safer bicycle travel as well as access to several town facilities and links to adjacent paths.

Integrated Bicycle Plan Feasibility Study, Cape Cod National Seashore, MA
Mr. DeSantis assisted in studying the feasibility of an integrated bicycle plan for the Cape Cod National Seashore for the National Park Service. His work included evaluating, estimating, and prioritizing potential facility improvements and connectivity to Cape Cod National Seashore attractions, adjacent town and bicycle facilities, including links to 15 towns on Cape Cod extending from regional transit hubs and bicycle trailheads and facilities at Brewster and Orleans north along Cape Cod to Provincetown.

EDUCATION

- BS, Civil Engineering, Northeastern University, 1976

PROFESSIONAL REGISTRATIONS

- Professional Engineer: RI, 1983; CT, 1990
- Licensed Construction Supervisor MA 1990
- League Cycling Instructor 2004

AFFILIATIONS AND MEMBERSHIPS

- East Coast Greenway Alliance, Member
- League of American Bicyclists, Member

Craig D. Robertson

Project Surveyor

Mr. Robertson is a project surveyor in VHB's Land Survey Group. He has performed diverse survey tasks for numerous projects in the greater Boston area for both public and private clients, many for institutional sites.

17 years of professional experience

Kroc Corps Community Center, Boston, MA
The Salvation Army received funding for the creation of the Ray and Joan Kroc Community Center in the Upham's Corner neighborhood of Dorchester in Boston. Survey tasks included preparation of a consolidation plan of over 54 individual parcels for the 6.2-acre site, an existing conditions plan, ALTA/ACSM land title survey, easement plans, discontinuance plans, and specific repair plans for the Public Improvement Commission.

Silver Line Tunnel Survey Services, Boston, MA
This project was an as-built of approximately 300 feet of the "binocular shaped" Silver Line Tunnel located below the Atlantic Wharf (formerly Russia Wharf) project to allow the project team to design a slurry wall. Coordinating with the MBTA, it entailed locating the interior surface of the inbound and outbound tunnel walls and incorporating high definition scanning from other contractors to plot the approximate exterior limits of the tunnel wall and show it relative to the proposed slurry wall.

Bulfinch Triangle Project, Boson, MA
This project is the redevelopment of three parcels within the Bulfinch Triangle neighborhood, formerly a portion of the Surface Artery of I-93. Survey tasks included, property line and existing conditions survey, ALTA/ACSM land title survey, as-builts of I-93 tunnel ceiling and Green Line tunnel limits, and the preparation various property line plans.

St. Elizabeth's Hospital, Boston, MA
St. Elizabeth's Hospital intends to build an emergency department expansion and that will require the preparation of an Institutional Master Plan for the Boston Redevelopment Authority. As part of this effort survey services included an existing conditions survey of the proposed location of the new building and roadway and construction layout.

Cullinan Engineering, Co. Inc., Boston, MA
Managed contract changes during project duration. Produced plans and documents that are accurate and well-organized within time and budgetary constraints, guaranteeing client satisfaction. Developed and maintained relationships with clients and associates, including real estate developers, contractors, architects, landscape architects, engineers, and lawyers. Communicated with both field staff and senior management to ensure accuracy, consistency and on-time project completion. Invoiced projects in a timely manner and assured that billing accurately reflected cost and project description. Acted as a resource to fellow staff in troubleshooting and brainstorming. Produced impressive presentation materials, including 2D and 3D images and movie fly-through views for several projects, stimulating new business initiatives from existing clients.

Atlantic Wharf Redevelopment, Boston, MA
Surveyed sites of three historic buildings in the Fort Point Channel to be developed into a mixed-use facility including 200 residential units, office space and retail space. This project consisted of

Craig D. Robertson (continued)

property line and existing conditions survey, ALTA/ACSM land title survey, as-built survey of the wharf, preparation of various property line and easement plans, and construction layout.

Cyrax™ HDS Projects

- Massachusetts Turnpike – Various Locations
- HMS Rose, Newport, RI
- 70 Pacific Street, Cambridge, MA
- Former Charles Street Jail Site, Boston, MA
- Logan Airport Terminal A Project, Boston, MA
- Shaw's Supermarket at the Prudential Center, Boston, MA

Other representative projects

- Daniel Marr and Sons: One Lincoln Street, Boston, MA – Construction control
- Fenway Park: Boston, MA – Presentation Materials
- Landmark Center: Boston, MA – ALTA/ACSM Survey
- Lenox Hotel: Boston, MA – Existing Conditions Survey
- Massachusetts College of Pharmacy, Boston, MA: Construction control
- Massachusetts General Hospital: Boston, MA – Various Projects
- Massachusetts Institute of Technology Campus, Cambridge, MA: Various topographic & utility survey projects for Campus – wide mapping
- Prudential Center: Boston, MA – Various Projects: 101 & 111 Huntington Avenue, Shaw's Supermarket & Belvidere Residences
- Suffolk University Dormitories, Boston, MA: Construction control
- University Park at MIT, Cambridge, MA: Various Surveying projects
- Various Residential Projects: Boston, MA – Certified plot plans, existing conditions & condominium site plans
- Wellington Circle Plaza: Medford, MA - Land Court Plans
- West Office Building and Boulevard Enhancements, World Trade Center, Boston, MA: Existing conditions survey, ALTA/ACSM Land Title Survey, construction control, and parking garage elevations monitoring MIT Campus: Cambridge, MA - Various Topographic & Utility survey projects
- Partners Healthcare: 100 Nashua Street: ALTA/ACSM Survey
- Department of Neighborhood Development: Existing Conditions, Subdivision & Building Permitting for several projects in Boston, MA
- John Moriarty & Associates: Necco Building Deformation Monitoring & control computations for Cyrax and construction layout

EDUCATION

- BS, Building Surveying, Napier University, 1997

PROFESSIONAL REGISTRATIONS

- Surveyor in Training MA

Gene F. Crouch

Environmental Services and Wetlands

Mr. Crouch, a Senior Wetland Ecologist and an Associate at VHB, is experienced in fresh and marine wetland ecology, research, permitting, environmental documentation preparation, and reporting. He has a thorough knowledge of federal environmental legislation and regulations, which he gained through previous experience with the US Army Corps of Engineers, the National Marine Fisheries Services, and the US Fish and Wildlife Service.

40 years of professional experience

MassCentral Rail Trail, Berlin to Waltham, MA

Mr. Crouch directed the aerial interpolation of wetlands along a 23-mile rail trail corridor for planning and initial environmental impact and permitting assessment. Work included delineation of wetland resources using aerial photographs of the corridor including wetlands, streams and rivers, with selective field review of the delineated resources. Based on the aerial delineation, impacts to wetlands, Riverfront Area and buffer zones were calculated using GIS along with potential impacts to floodplain from available FEMA mapping. This work was conducted to provide a planning level assessment of environmental impacts and list of permits needed for inclusion in an Environmental Notification Form on the Project.

Shining Sea Bikeway, Falmouth, MA

Mr. Crouch provided environmental planning and permitting for a 6-mile extension of the Shining Sea Bikeway for the Town of Falmouth and Massachusetts Department of Transportation. The project extended the existing bikeway from just outside downtown Falmouth to North Falmouth along the eastern coast of Buzzards Bay along a former railroad alignment. The Bikeway crossed or ran alongside several large salt marsh complexes including the Great Sippewissett Marsh. The Project also crossed protected box turtle habitat and directly impacted a protected rare plant species. Coordination with the Natural Heritage and Endangered Species Program (NHESP) included development of construction measures to protect box turtles, development of signage along the alignment notifying the public of the presence of box turtles and relocation of the small population of blazing star plants growing between the rail tracks. With the measures Mr. Crouch developed to address the NHESP concerns, the Project was permitted without the need for a Conservation and Management Permit.

Blackstone River Greenway, Segment 1, Blackstone, Millville, and Uxbridge, MA

For the Massachusetts Division of Conservation and Recreation (DCR), Mr. Crouch provided environmental planning and permitting in three towns, including field delineation and mitigation efforts for Segment 1 of the Blackstone River Bikeway. The project includes 3.3 miles of greenway and 11 bridges.

MassDOT, On-Call Environmental Contract, Statewide Massachusetts

Mr. Crouch provides as-needed services necessary to support environmental compliance projects for the Massachusetts Department of Transportation's (MassDOT) Construction Advertising Program. Services have included statewide environmental permitting and National Environmental Policy Act (NEPA) support. As part of this program, Mr. Crouch directed the preparation of a Notice of Intent for 400 feet of stream bank restoration along the Little River in Westfield and helped MassDOT develop a bridge Programmatic General Permit with the U.S. Army Corps of Engineers (USACE).

Gene F. Crouch (continued)

Route 20 Reconstruction, West Springfield, MA

For the Town of West Springfield, Mr. Crouch directed preparation of Massachusetts Highway Department (now, the Massachusetts Department of Transportation) Early Environmental Coordination documents for improvements to Route 20 in West Springfield (Westfield Street from Second Street/ Chestnut Street Intersection Elm Street). The effort included preparation of letters to environmental resource agencies and the local historic commission, as well as solicitation of comments on potential impacts. In addition, a Categorical Exclusion Checklist was prepared to demonstrate the project would be exempt from federal National Environmental Policy Act (NEPA) review.

East-West Parkway & Related Facilities Design-Build, Weymouth, MA

For the South Shore Tri-Town Development Corporation (SSTTDC), Mr. Crouch is serving as the Environmental Scientist and Monitor on a Barletta Construction-led roadway and bridge project that includes the design and construction of a 3,500-linear-foot segment of parkway, which includes three individual bridges, 1,400 linear feet of mechanically stabilized earth (MSE) walls, and the partial truncation of a two-story office building. The project is being overseen by the Massachusetts Department of Transportation (MassDOT). Mr. Crouch's responsibilities included obtaining amendments to the two existing Orders of Conditions, Water Quality Certificate, and U.S. Army Corps of Engineers (USACE). In addition, he designed a river channel restoration plan for the removal of four ten-foot-diameter culverts, an 8,000-square-foot wetland replacement area, and planting plans for three constructed stormwater wetlands. Mr. Crouch also conducted site inspections and prepared monitoring reports as mandated by the U.S. Environmental Protection Agency (EPA) Construction General Permit.

Middlesex Turnpike and Route 62 Roadway Improvements, Bedford and Burlington, MA

As part of an extensive land development project, Mr. Crouch provided the environmental evaluation and permitting for roadway improvements required as offsite traffic mitigation for a large office park complex. He coordinated required environmental permitting efforts for the roadway improvements, utility relocation, and geotechnical borings. To satisfy regulatory agencies' requests for data about wetland impacts, floodplain impacts and storm water quality, Mr. Crouch developed a strategy for floodplain mitigation that incorporated already planned elements of the roadway improvements and minimized additional construction.

EDUCATION

- BS, Biology, Northeastern University, 1974

AFFILIATIONS AND MEMBERSHIPS

- International Erosion Control Association
- Association of State Wetland Managers

Erin L. Thompson, PE, IMSA III

Traffic

Ms. Thompson, a Traffic Engineer with VHB's Transportation Systems Group, is a specialist in all facets of traffic design work, including development of traffic signal layout, traffic signal coordination, signing and pavement marking plans, geometric layout, and roundabouts, as well as preparation of project specifications, contract documents, and quantity and cost estimates.

17 years of professional experience

State Street Transportation Planning and Design Services, Springfield, MA
As part of a project to provide provided transportation planning and design for a busy urban 3.2-mile, four-lane arterial corridor lined with businesses, residences, parks, cultural amenities, institutions, and major historical assets, Ms. Thompson was responsible for signage, pavement markings, and traffic signal design and coordination for several miles of roadway, including 17 signalized intersections. She also prepared construction quantity and cost estimates.

MassDOT/MBTA, South Coast Rail Commuter Rail Extension Traffic Services, New Bedford to Fall River, MA
For MBTA and MassDOT, Ms. Thompson prepared contract documents for traffic signal design, including traffic signal layout, timing, phasing, and pedestrian improvements according to ADA/AAB specifications for signalized intersections affected by a project to restore commuter rail service from Boston to the South Coast area of Massachusetts including both New Bedford and Fall River.

University of Massachusetts, North Pleasant Street Roundabout, Amherst, MA
Ms. Thompson prepared design plans to convert a signalized intersection into a modern roundabout at the north edge of the UMass Amherst campus. The intersection needed to accommodate heavy pedestrian traffic, bicycles and local transit buses. Traffic calming features included raised crosswalks on two approaches. The design also preserved a large tree, improved drainage at a residence hall, and put overhead utilities underground.

John Fitch Highway Roundabout, Fitchburg, MA
For MassDOT, Ms. Thompson prepared signing and pavement marking plans for a modern roundabout for the intersection of a rural highway with a low-speed side street. Design features included extended splitter islands for speed reduction and "fish-hook" pavement markings on a multi-lane approach.

Middlesex Turnpike North, Bedford/Burlington/Billerica, MA
Ms. Thompson is responsible for signage, pavement striping, and traffic signal design as well as traffic signal coordination for several miles of roadway, including eight signalized intersections. She also prepared construction quantity and cost estimates.

Route 1 Traffic Signal Design, Norwood, MA
For a private development, Ms. Thompson prepared contract documents for the redesign of the intersection of Route 1 and the associated jug-handle ramps with Dean Street, including Functional Design Report, traffic signal layout, timing and phasing for three intersections to operate off a single controller, dilemma zone detection, emergency preemption around a blind curve, and pedestrian improvements according to ADA/AAB specifications.

Erin L. Thompson, PE, IMSA III (continued)

Route 24 Interchange, Freetown/Fall River, MA

Under contract with the Massachusetts Department of Transportation (MassDOT), Ms. Thompson analyzed and prepared 25% design plans for a proposed interchange to service a proposed 300-acre corporate office park and existing industrial facilities. The design accommodates a future widening of Route 24 and includes three signalized intersections.

Phase IV Traffic Signal Computerization Services, New Haven, CT

Under contract to the City of New Haven to complete the engineering design and preparation of construction contract documents (PS&E) for Phase IV of the expansion and upgrade of the New Haven computerized traffic control signal system, Ms. Thompson performed analysis and prepared design plans for 44 signalized intersections. The work, which involved centralized system integration and the use of hybrid 2070 technology, was designed to Connecticut Department of Transportation (ConnDOT) standards and specifications.

Central Artery/Tunnel Traffic Services, Boston, MA

For the Central Artery/Tunnel project through downtown Boston, Ms. Thompson was responsible for various signage, pavement markings, traffic signal design, and geometry designs for Central Artery contracts C01A3, D01A7, and D019E.

EDUCATION

- BS, Civil Engineering, Indiana Institute of Technology, 1997

PROFESSIONAL REGISTRATIONS

- Professional Engineer (Civil) MA 2008
- International Municipal Signal Association Certified – Traffic Signal Level 3 (field)
- International Municipal Signal Association Certified – Work Zone
- OSHA Construction Safety and Health Certificate (10-Hour) (10 Hour Site Safety)

AFFILIATIONS AND MEMBERSHIPS

- Institute of Transportation Engineers, 2001

www.vhb.com

Vanasse Hangen Brustlin, Inc.

October 10, 2014

Jody Kablack
Director of Planning and Community Development
Town of Sudbury
Flynn Building
278 Old Sudbury Road
Sudbury, MA 01776

Re: 25% Engineering/Design Services for the Bruce Freeman Rail Trail

Dear Ms. Kablack:

This letter is in response to some questions and clarification comments sent to Trish Domigan via email from James Kupfer dated October 7, 2014. We have revised the scope, Attachment B (MassDOT Model Scoping Workbook), Additional Scope Items Chart, and Attachment C (Sudbury Scoping Workbook) as appropriate based on the following questions:

Questions from Scope:

1. Section 187, Water Quality Data Form left off? How come, or would you like to add this to the scope?
   Response: It was considered part of the Early Environmental Coordination. Task 187 has been added to the scope with no change in the fee for Section 150.

2. Section 200, Parking analysis is included in this report, it calls out Davis but the Town will want a full parking evaluation for the full trail (additional locations, commercial lots could be in play). Is this indicated elsewhere?
   Response: The design intent was to identify publically owned parking facilities in close proximity to the BFRT that could be used for parking. The scope submitted in the proposal included a parking study that will determine the turnover rate in the Davis Field parking area, but not in the other parking lots along the trail. The additional scope submitted will include parking demands for up to three (3) additional lots along the corridor.

3. Section 220, a Design Exception Report is not needed but our understanding is a Justification Report is, do you feel it is needed, is this incorporated elsewhere?
   Response: A Design Exception Report may be required if the path width is reduced because of the width of the existing abutments or steel stringers. However, the FDR submitted with the original proposal is equivalent to a Corridor Justification Report for a rail trail.

4. Section 240, where in the workbook (hours) is the conceptual design?
   Response: The hours were included in the original price proposal under the task for the FDR and the Alternatives Analysis for Union Ave.

5. Section 240, 243, potential for other minor offshoots or movements from ROW. Is this reflected in scope?

101 Walnut Street, Post Office Box 9151
Watertown, Massachusetts 02471-9151
617.924.1770 ▪ FAX 617.924.2286
www.vhb.com

Response: Yes. Some of this work is also include in the FDR.

6. Section 300, Field Survey, please provide estimate hrs/cost for expanded survey. In speaking with our Town Engineer, he is concerned about assumptions listed and ability to get them. Atlantic Engineering has not responded to date. Could you please add hrs/cost for if additional survey info is not available?
   Response: Additional field survey and drafting hours has been added to the "Additional Scope Items for full MassDOT 25% Design Submittal" chart. Wetland flags and additional survey at intersecting streets is included in the original proposal. Section 310 has been established to address this question.

7. Section 330, Construction Contract Time Determination, is this mandatory for 25% design, if so please include in scope.
   Response: A CCTD is only required if a Project Utility Coordination (PUC) form and/or an incentive/disincentive clause is part of the project. We do not anticipate MassDOT providing an incentive/disincentive for this project. Therefore, a CCTD will only be required if there is a utility relocation required.

8. On the ground survey for wetlands is mandatory to extent necessary and the Town does not accept GPS. Will this be completed within the scope provided?
   Response: Yes, ground survey for the wetlands was included within the scope provided.

9. Section 700 and 710, in our discussion we the Town stated we did not need the structural at this time if the 25% can be approved. The Town Engineer has told us he wants this at the 25%. Could you please add this to your scope and budget?
   Response: Scope and budget has been added for these Sections. We are assuming that the existing abutments will be reused and that geotechnical design is not required.

We are also providing the standard MassDOT workhour sheets used to budget this project. The direct hourly rates provided in the MassDOT workhour sheet correspond to the hourly rate submitted with the original proposal. To simplify the scope changes, we have only included the tasks that have been revised or added based on the Town's comments.

If you have any questions about this submittal, please contact me at Pdomigan@vhb.com or (617) 924-1770 for more information.

Very truly yours,
VANASSE HANGEN BRUSTLIN, INC.

Gaile Lenhardt

FOR Trish Domigan, PE
Director, Massachusetts Municipal Services

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION

HIGHWAY DIVISION

10 Park Plaza, Boston, MA

STANDARDIZED
SCOPE OF SERVICES GUIDANCE
FOR PREPARING
WORK HOUR ESTIMATE FORMS
FOR CONSULTANT SERVICES

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

SCOPE OF WORK FOR

BRUCE FREEMAN RAIL TRAIL
SUDBURY, MASSACHUSETTS
December 18, 2014

The following summarizes the scope for work for this project; which consists of: providing ground survey, locating wetland boundaries and submitting an Abbreviated Notice of Resource Area Delineation to the Sudbury Conservation Commission, the preparation of a preliminary trail design that complies with MassDOT Highway Division and AASHTO criteria, development of design options for the at-grade crossings at Route 117 (North Road), Pantry Road, Haynes Road, Morse Road, Route 27 (Hudson Road), Codjer Lane and Old Lancaster Road, an alternatives analysis for the rail trail from Old Lancaster Road to the Massachusetts Central Rail Trail, a parking study at the Davis Field parking lot, community outreach, meetings with the town, and abutter coordination.

PROJECT LIMITS

The Bruce Freeman Rail Trail (BFRT) is a proposed 25-mile rail trail between Lowell and Framingham along the former Lowell Secondary Track right-of-way of the Old Colony Rail Road. In Sudbury, the rail corridor extends through the center of Town, approximately 4.4 miles from South Sudbury at the trail intersection with the Massachusetts Central Rail Trail, north to the Sudbury *I* Concord Town line. This portion of rail corridor is owned in its entirety by the Commonwealth of Massachusetts.

TASK DESCRIPTIONS

The following summarizes the scope of work for this assignment, which has been prepared in accordance with MassDOT's Standardized Scope of Services. MassDOT Scoping Workbook provides a more detailed breakdown of the fee associated with each task below.

SECTION 100 PROJECT DEVELOPMENT ENGINEERING

101 Project Concept Preparation (Development of Purpose and Need)

VHB shall prepare a general description and definition of the project. Visit site and conduct preliminary surveys.

SECTION 150 ENVIRONMENTAL

General

The following task descriptions offered in this Section provide a basic description of the various actions to be taken in the environmental permitting process. MassDOT's Environmental Services Division should be consulted regarding all environmental permitting requirements.

151 Early Coordination

VHB shall coordinate with local, regional, state, and federal resource agency staff to provide them with an opportunity to indicate whether environmental resources are in the project area and their extent and potential significance; to present issues or concerns; or to provide input on the endorsed alternatives.

153 Massachusetts Endangered Species Act (MESA) Determination

VHB shall determine the appropriate level of documentation in the MESA process by reviewing the most recent MNHESP Priority Habitat map to determine if the proposed work is located within a mapped area. If a project is not located within a mapped polygon then no early coordination with MNHESP is required.

154 Hazardous Materials Research/Review

VHB shall provide information generated in accordance with the requirements of Section 2-A-7, *Environmental Requirements for 25 Percent Design,* of the *Project Development and Design Guide* to the MassDOT Hazardous Materials Unit during its review.

155 Project Development Meetings and Public Hearings

VHB shall prepare for and hold public meetings and public hearing(s) as agreed upon by MassDOT and VHB.

156 National Environmental Policy Act / Massachusetts Environmental Policy Act (NEPA/MEPA) Determination

VHB shall determine the appropriate level of documentation in the NEPA process (Categorical Exclusion, Environmental Assessment (EA) or Environmental Impact Statement (EIS)) and the MEPA process (Environmental Notification Form (ENF) or Environmental Impact Report (EIR)) by meeting and coordinating early with government agencies, local boards and commissions, and conducting public meetings, as agreed upon in the Scope of Services.

157 NEPA–Categorical Exclusion (CE)

VHB shall prepare a Categorical Exclusion (CE) Determination Checklist for Federal-Aid Actions in accordance with the *Programmatic Agreement For Approval Of Categorical Exclusions Between The Federal Highway Administration And The Massachusetts Highway Department*, dated May 17, 2005, and Federal Highway Administration Regulation 23 C.F.R. § 771.117 (1987).

163 MEPA–Environmental Notification Form (ENF)

N/A

176 Wetland Resource Area Delineation

VHB shall conduct wetland resource area delineation in accordance with the Massachusetts Wetlands Protection Act (WPA), MGL C. 131 § 40, and the Federal Clean Water Act, the *1987 Corps of Engineers Wetlands Delineation Manual,* and guidance in *Clarification and Interpretation of the 1987 Manual*, dated March 6, 1992. Include all field time associated with delineating wetland boundaries and time attending local, state, and federal site meetings to review and verify wetland boundary lines. If applicable, documentation must be provided on state Appendix G Wetland Delineation Forms or US Army Corps Wetland Determination Forms for submittal to regulatory agencies.

177 WPA Abbreviated Notice of Resource Area Determination (ANRAD)

VHB shall prepare an ANRAD in accordance with the WPA to obtain approval of wetland resource area boundary lines. VHB services provide for the preparation of all associated forms and backup documentation, coordination during review, site walks, and attending Conservation Commission meetings.

184 Wildlife/Rare Species Assessment

N/A

186 Coordination and Liaison

VHB shall participate in environmental meetings with MassDOT assisting in expediting the permitting process, and compiling and maintaining environmental files and records.

187 Impaired Waterbody Assessment and Water Quality Data Form

VHB shall determine if there are Impaired Waterbodies, as evaluated per the requirements of Section 303(d) of the Federal Clean Water Act, affected by highway runoff generated in the project area by completing the 25% Design portion of the Water Quality Data Form.

SECTION 200 FUNCTIONAL DESIGN REPORT

A Functional Design Report, or Technical Traffic Memorandum documents the process for determining the preferred alternative and the parameters for design.

201 Establish Purpose and Need

VHB will establish a purpose and need statement of the project.

202 Public and Agency Outreach

VHB will conduct public and agency outreach for the project to reassure that the project meets its intended purpose, benefits from the input and feedback from interested citizens, local and regional groups, and elected officials, and maintain strong support.

203 Evaluate Existing Conditions / Context and Parking

VHB will provide a narrative of locations the trail will cross existing roadways identifying lane configurations, key dimensions, design speed, posted speed, Speed Regulations, functional classification, environmental constraints, Roadway context, roadway users, etc. VHB will prepare and provide a project locus map.

VHB will review the immediate rail trail vicinity to determine whether there are other appropriate locations for designated parking areas in Sudbury. VHB will determine the existing parking supply at the parking lot on Route 117 at Davis Field and up to three other parking lots as directed by the client. VHB will collect typical weekday and weekend existing parking demand data through field observations occurring periodically over the course of a day between the hours of 9AM and 4PM.

204 Prepare Traffic Volumes

Town will provide appropriate traffic counts for the study area and VHB will provide an assessment of data to determine factors for background growth and seasonal adjustments. Prepare the future design volumes.

205 Conduct Safety Analysis

No anticipated roadway crossings are HSIP-eligible based on recent crash history. VHB will collect, tabulate, and analyze the crash data and document trends and causes based on crash reports provided by the local Police Department for any on-road portions of the proposed route VHB will prepare crash rate work sheets, collision diagrams, and collision mapping and review safety with respect to the Safety Review Prompt List as required.

206 Evaluate Signal Warrants

VHB will analyze traffic count data with respect to the MUTCD Traffic Control Signal Needs (Warrants) based on the existing geometric conditions to determine if signals are justified for either a traditional traffic signal or for a pedestrian hybrid beacon at each roadway crossing.

209 Development of Alternatives

For each crossing location, VHB will provide a discussion and evaluation matrix of alternatives considered.

211 Preferred Alternative

VHB will provide a description and graphical presentation of the preferred alternative for each roadway crossing.

For the preferred alternative, VHB will estimate the parking demand of the BFRT users at the Davis Field parking lot and other parking lots incorporated into the 25% deign. VHB will consider the nearest parking facility in Concord (one location) in the calculation of demand estimates.

214 Traffic Management

Prepare a Construction Management Outline providing a description of all major construction components of the project and how vehicle, pedestrian, and bicycle accommodations will be maintained.

217 Report Preparation

Prepare a report detailing the various design alternatives with appropriate graphics and descriptive text justifying the recommendations presented.

SECTION 240 CONCEPTUAL DESIGN

241 Constraints map.

VHB shall prepare a constraints map on an aerial plan to depict base survey information, wetlands limits, other environmental constraints, ROW lines, encroachments, etc and will describe constraints in narrative terms. VHB will complete a constructability review.

242 Conceptual Alignment

VHB shall identify construction details, provide critical cross sections and vertical and horizontal geometry of entire length of rail trail, including surface treatment, shoulders, road crossings, bridges, etc. in accordance with MassDOT Shared Use Paths and Greenways requirements and as directed by the Town.

243 Path Alternatives Analysis

VHB shall also identify design alternatives for constrained areas from Old Lancaster Road, to the Mass Central Rail Trail. The alternative alignment will follow the Union Ave right of way, identifying pros/cons and cost/benefit analyses. VHB assumes that the only alternative route will be along Union Avenue.

SECTION 250 TOWN MEETINGS

VHB shall attend meetings with Town boards, commission, departments, residents and abutters. VHB shall prepare and meeting handouts and shall prepare meeting minutes.

251 Town Public Meetings

VHB shall facilitate eight (8) public night-time meetings, throughout the design process. The public meetings shall focus on addressing the communities concerns and comments associated with the development of the rail trail. Meeting materials shall be prepared prior to the meetings, and forwarded to the Town for review and comment. All public meetings shall be documented, and materials shall be forwarded to the Town for posting on the Town website, if requested.

252 Town Staff Meetings

VHB shall attend twelve (12) day time staff meetings.

253 Monthly Progress Reports

VHB shall provide the Town with monthly updates and/or progress reports.

254 Abutter Meetings

VHB shall meet with abutters to determine privacy and screening needs. It is assumed that there will be up to ten (10) abutter meetings.

SECTION 300 25% HIGHWAY DESIGN SUBMISSION

Field Surveys

Complete or partial field surveys may be made by either the MassDOT or VHB, or partially by each, as designated in the Scope of Services and Special Provisions.

Surveys shall be made as necessary for the preparation and completion of preliminary and final designs, contract plans and layout plans for the project, including an investigation and survey of property boundaries and property owners' names as obtained from records filed at the Registry of Deeds.

Horizontal control, including control for photogrammetry, shall be of second order precision and accuracy unless otherwise specified, and in strict conformance to the current *Massachusetts Highway Department Survey Manual* (*Survey Manual*) or *Specifications for Aerial Surveys and Mapping by Photogrammetric Methods for Highways*, whichever applies.

Primary traverses and proposed connection to Massachusetts Geodetic Survey (MGS) control shall conform to Section 2 (Survey Information) of the *Survey Manual*. The primary traverse

will be designed so that it will be connected in position and azimuth to MGS monumentation of equal or higher accuracy.

Primary control and all main base line surveys shall be computed and adjusted according to the guidelines set forth in the *Survey Manual*.

Vertical control, including control for photogrammetry, shall be of the accuracy and datum as specified in the *Survey Manual* and shall be subject to the same review and other conditions as horizontal control.

VHB shall document in the survey notebooks adequate ties to all horizontal and vertical control points, for the new limits of work, so that these points may be reproduced accurately. VHB shall also furnish tie–sheets of these points. VHB shall be responsible for reestablishing points, establish baseline stakes or pins, which it placed and which become displaced or removed and cannot be replaced by existing ties.

Field survey shall also identify the location of wetland flags or other marks, which have been established by others.

Data from survey notes shall be transcribed and plotted on base plans, profiles and cross sections in accordance with current practices of MassDOT and to the scales directed by the Engineer.

All field surveys and plotting of such data, such as base lines, details and cross sections, shall be performed in accordance with the *Survey Manual*, data collection specifications and approved MassDOT CADD procedures.

Utilities

VHB shall contact the various utility companies and authorities, whose facilities may be affected by the proposed construction, to request from such companies and authorities the locations of existing facilities, together with proposed changes, if any.

VHB shall design alterations of publicly owned utilities, which may be required due to construction of the project, except in cases such as alterations of fire or police signal systems or other systems where, in the opinion of the VHB and the Town, public convenience or safety requires such alterations to be designed and performed by the particular public agency involved. Insofar as practical, and as approved by the Town, designs of such alterations of publicly owned utilities by VHB shall conform to the requirements and design standards of the particular public agency involved.

In connection with all alterations of utilities not designed by VHB, whether publicly or privately owned, and in connection with alterations of facilities of public transit systems or railroads, the Consultant shall furnish to the agencies involved data needed for their design of the alterations, including data regarding possible interference with other facilities. VHB shall review designs prepared by other agencies in connection with the work under this Contract and shall coordinate all alterations, whether designed by him/her or by others. In the case of utility or railroad

alterations to be designed at the expense of the Commonwealth by other agencies, such as state or municipal departments, utility owners or railroad companies, VHB shall assist MassDOT in obtaining cost estimates from those agencies.

301 Project Initiation and Data Compilation

VHB will compile and review all available documents of existing features and planned projects in the vicinity of the proposed work. Included, as part of this task, is the investigation of utility installations, previous subsurface explorations, traffic data, and right of way research.

302 Utility Coordination

VHB will contact public and private utility agencies to verify locations of existing utilities within the limits of work (Codjer Lane, Old Lancaster Road, Hudson Road (Rt 27), Morse Road, Hayes Road, Pantry Road and North Road (Rt 117). These existing utilities, such as gas, water, telephone, cable, electric, etc. will be shown on the updated base plan from these record drawings. Invert elevations, pipe size, pipe type, and direction of flow field located in task 305 below will also be plotted on the base plan

303 Survey Coordination and Controls

VHB will coordinate ground survey effort, review survey controls and closures, baseline ties and overall quality of survey.

304 Base Plans, Profiles and Typical Sections

Updated existing base plan prepared by Surveyor of Record in 2008 and last revised in 2009 to MDOT Civil 3D 2012 survey template per the procedure by MassDOT Survey department supplied to VHB.

VHB will perform field review of base plan information and verify the location of existing features, note legends on all warning, regulatory and route marker signs. Verify that the plans provide sufficient information regarding existing drainage and sewer systems. Verify that the cross sections include existing features such as walls, hydrants, poles, trees, sills, wells, ledge, layout lines, etc. Verify that profiles include station equations, cross culverts, bridge structures, sills, high-tension lines, benchmarks, etc.

305 Field Reconnaissance

Horizontal and Vertical Control

VHB will recover Existing Horizontal and Vertical control completed by the Surveyor of Record.

Survey Updates

Area 1 – Codjer Lane Roadway Survey - VHB will perform field survey to locate approximately 600 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 2 – Old Lancaster Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 3 – Hudson Road (Rt 27) Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 4 – Morse Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey include the locations of such features as; paved areas, curbing, landscaping, sidewalk, walls, surface utilities, etc. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 5 – Hayes Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at

sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 6 – Pantry Road Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Area 7 – North Road (Rt 117) Roadway Survey - VHB will perform field survey to locate approximately 1,000 L.F. of roadway crossing the existing ROW to extend the 2008 Project limits. Limits will extend 10 ft from edge of pavement/back of sidewalk of surveyed roadway. The survey will identify the locations of such features as: paved areas, curbing, landscaping, sidewalk, walls, and surface utilities. that are located within the limits of roadway. In addition, ground elevations will be taken at sufficient locations to produce one-foot (1') contours. Surface utilities within the limit of the roadway will be field located. Drainage and Sewer invert elevations, pipe size, pipe type, and direction of flow will be field located, where accessible. Survey base plan will be updated to incorporate the extended roadway survey locations.

Wetland Delineation Survey – (i) VHB will perform field survey to locate wetlands Flagged by VHB Environmental Engineers along the 4.4 mile ROW. The survey will located flags by total station 25' beyond the Existing ROW; (ii) VHB will perform field survey of delineated wetland flags within the seven (7) roadway areas noted above.

306 Plot Existing Layout Lines

VHB will plot and calculate existing layout line geometry and note all property owners within the new limits of work (Codjer Lane, Old Lancaster Road, Hudson Road (Rt 27), Morse Road, Hayes Road, Pantry Road and North Road (Rt 117) and add them to the updated base plan.

307 Meetings and Liaison

VHB will attend one (1) utility meeting with Utility Company representatives and the District 3 DUCE.

VHB will attend two (2) meetings with MassDOT. One meeting will be a coordination meeting and the other shall be the comment resolution meeting.

308 Determine Roadway Cross Section

N/A – It is assumed that the path will be 10' paved with 2' shoulders on each side.

309 Preliminary Horizontal Geometry

VHB shall develop horizontal geometry based on minimizing environmental & cultural resources, abutting properties and intersected roadway crossings.

310 Preliminary Vertical Geometry

VHB shall develop vertical geometry based on minimizing impacts to environmental resources and the existing ballast.

311 Cross Section Studies

VHB shall conduct an iterative horizontal and vertical geometry refinements for critical cross sections based on the interface with the proposed cross-section and existing features.

312 Prepare Cross Sections

VHB shall prepare cross sections to determine the tops and bottoms of slope. Evaluate the impacts to resource areas, the need for retaining walls and determine the limits of work.

313 Plot Proposed Layout and Easements

VHB shall identify any proposed permanent or temporary easements and rights of entry, based on the limits of work determined by the cross sections.

314 Pavement Design

N/A –

315 Typical Sections

VHB shall prepare representative typical sections for the path alignment at various locations.

316 Construction Details

VHB shall provide details of key features only. Since this is the 25% design, not all details will be finalized or provided.

317 Hydrological Studies and Hydraulics Report

N/A

318 Preliminary Drainage and Utility Studies

VHB will develop a drainage design for the rail trail. It is anticipated that the drainage system will consist of a series of water quality swales that will discharge to the surrounding wetlands. This proposal excludes the design of closed drainage systems.

319 Lane Configurations

N/A

320 Traffic Signals

VHB will prepare signal plans depicting signal head type, quantity, and location and include the sequence and timing chart and preferential phasing diagram for traditional traffic signal designs and/or pedestrian hybrid signals, if applicable.

321 Signs and Pavement Markings

VHB will prepare preliminary sign and pavement marking plan to document changes associated with conceptual design.

322 Traffic Management

VHB shall provide a general methodology for constructing the proposed project roadway crossings to minimize the impact to motorists and abutters, while at the same time addressing construction costs and constructability. Prepare preliminary temporary traffic control plans.

323 Miscellaneous Contract Plans

VHB shall prepare miscellaneous full size drawings for 25% submission. These shall consist of the following miscellaneous contract plans, as required: Title Sheet, Index, Key Plan, General Plans, Alignment Plans, Profiles and Special Details.

324 Constructability Review

VHB will review the proposed project to identify unusual matters that would unduly increase the cost the project or present potential scheduling delays during construction resulting in claims for extra work.

325 Quality Control (QC) Review

VHB shall perform review of the quality and accuracy of the documents so that key aspects of the information to be presented to MassDOT are prepared in accordance with the Guidebook, the Standard Specifications for Highways and Bridges and the most recent Supplemental Specifications, Standard Nomenclature and Engineering Directives.

326 Preliminary Construction Estimate

VHB shall prepare a preliminary cost estimate using MassDOT's Weighted Average Bid Application (WABA). The estimate should be prepared with a level of detail commensurate with a 25% submittal.

327 Submission Checklists

VHB shall prepare and submit the 25% Highway Design and Traffic Checklists.

328 Modifications and Revisions

VHB shall review the comments received at the 25% design stage and revise the plans accordingly, prior to scheduling the public hearing, in order to properly present the nature and extent of the project to the public at the hearing.

329 Value Engineering (VE)

N/A

330 Construction Contract Time Determination

N/A

331 Incentives/Disincentives

N/A

SECTION 310 SUPPLEMENTAL SURVEY

VHB shall perform ground survey within the existing Railroad Right of Way in the event that points and the existing surface (dtm) cannot be provided by the Town. The survey of the wetlands and roadway crossings is already provided under SECTION 300.

303 Survey Coordination and Controls

VHB shall coordinate ground survey effort, review survey controls and closures, baseline ties and overall quality of survey.

304 Base Plans, Profiles and Typical Sections

VHB shall perform field review of base plan information and verify the location of existing features, note legends on all warning, regulatory and route marker signs. Verify that the plans provide sufficient information regarding existing drainage and sewer systems. Verify that the cross sections identify existing features such as walls, hydrants, poles, trees, sills, wells, ledge,

layout lines, etc. Verify that profiles include station equations, cross culverts, bridge structures, sills, high-tension lines, benchmarks, etc.

305 Field Reconnaissance

Horizontal and Vertical Control - VHB will set Horizontal and Vertical control to MassDOT standards.

VHB will perform field survey to locate approximately 4.4 miles of topography within the existing ROW. Ground elevations will be taken at sufficient locations to produce one-foot (1') contours.

SECTION 350 DESIGN PUBLIC HEARING

351 Hearing Preparation

VHB shall prepare the graphics and other visual aids per the negotiated scope of services to display at the public hearing. VHB shall also prepare a public hearing handout.

352 Design Public Hearing

VHB will attend one (1) Design Public Hearing, present the project to the public and respond to questions. Assist MassDOT in preparing written responses to letters received from concerned individuals as a result of the hearing.

SECTION 500 RIGHT OF WAY

Preliminary Right of Way plans shall be prepared prior to holding the 25% Design Public Hearing. Existing data, details and all proposed work shall be prepared in such a manner as to be readily discernable.

501 Preliminary Right of Way Plans

VHB shall determine appropriate limits of alterations to existing layouts, takings, permanent easements, temporary easements, etc and prepare Preliminary Right of Way Plans in accordance with MassDOT ROW requirements. The Right of Way Plans shall consist of Title Sheet, Typical Sections, Parcel Summary Sheet, Location Maps and Property Plan Sheets.

502 Layout Plans and Order of Taking

N/A

503 Written Instrument

N/A

504 Final Right of Way Plans

N/A

SECTION 600 GEOTECHNICAL DESIGN

No scope of work is assumed for this task. It is assumed that the existing abutments, originally designed for railroad loading will be adequate for the proposed mixed-use trail loading.

SECTION 700 PROJECT DEVELOPMENT – STRUCTURAL

For each of two bridge locations:

VHB shall establish the site parameters and constraints that will impact the design and construction of the bridge structure through a field investigation, review of information related to the existing structure (if any), review of available hydraulic and scour data, geotechnical data, environmental information, and cultural resource information, hazmat information. VHB shall use this information to determine the most appropriate type of structure for the site that addresses these parameters and constraints to be pursued when the Final Bridge Design work is completed.

701 Field Investigation

VHB shall conduct a field inspection to review the bridge sites and adjacent conditions, and establish project parameters and constraints. The ground and river survey to determine the parameters for bridge design. Detailed field measurements and document the existing condition of the bridge to assess suitability for re-use will also be done during the visit.

702 Determine Bridge Configurations

VHB shall collaborate with the highway designer to determine the vertical and horizontal alignments and typical cross-sections for both structures over the brook crossings.

703 Preliminary Structural Analysis

VHB shall compare the original design loads with the proposed design to determine the impacts to existing structural elements to be considered for re-use. VHB shall also determine appropriate superstructure types and perform a preliminary structural analysis to determine the approximate superstructure depth as replacement alternative.

704 Comparative Design and Cost Analyses

VHB shall evaluate those alternate bridge structure types that are appropriate to the site based on considerations of highway design parameters, safety, impacts to surrounding properties and environmentally sensitive areas, constructability, and aesthetics. Cost shall only be used to select between alternates that have been determined to be equally appropriate to the site based on the Type Section Worksheet.

705 Preliminary Structures Report Preparation

VHB shall prepare a Preliminary Structures Report including an investigation of rehabilitation verses replacement. The report shall evaluate the structural components that have less capacity than required for statutory live load and other conditions that would justify the recommendation for rehabilitation or replacement. Additionally, the report will evaluate the suitable superstructure types for new construction on the existing abutments.

706 Bridge Type Selection Worksheet Preparation

N/A - There is no work anticipated under this item.

707 Meetings and Liaison

VHB shall attend meetings and coordinate with MassDOT during the preparation of the type study report to advance the work. Respond to MassDOT review comments.

708 Hydraulics Study and Report (Bridges over Water)

N/A - There is no work anticipated under this item.

SECTION 710 SKETCH PLANS

VHB assumes that this work will be done under an amended scope of services after the 25% submission.

SECTION 750 FINAL BRIDGE DESIGN

VHB assumes that this work will be done under an amended scope of services after the 25% submission.

MassDOT - HIGHWAY DIVISION

SCOPING WORKBOOK Form 1.4 Summary Table

City/Town	SUDBURY				Contract No.:	0			
Location:	Bruce Freeman Rail Trail				Assignment No.:	0			
	0				ProjInfo No.:	0			
October 14, 2014									
				HOURLY RATE SUMMARY					
				3					
			PIC	PM	SE	Eng	AE	ET	
DIRECT HOURLY RATE ($) (Design)			$70.00	$52.00	$47.00	$30.00	$25.00	$20.00	
HOURLY RATE ($) (Design)			$192.50	$143.00	$129.25	$82.50	$68.75	$55.00	
				WORK HOUR AND FEE SUMMARY					
TASK DESCRIPTION		PIC	PM	SE	Eng	AE	ET	Task Hour	Task Fee
100	PROJECT DEVELOPMENT ENGINEERING	4	4	0	0	0	0	8	$ 1,342.00
150	ENVIRONMENTAL	0	0	38	0	134	66	237	$ 17,754.00
200	FUNCTIONAL DESIGN REPORT	8	26	91	142	22	0	289	$ 30,247.25
220	DESIGN EXCEPTION REPORT	0	0	0	0	0	0	0	$ -
240	CONCEPTUAL DESIGN	0	2	16	16	20	8	62	$ 5,489.00
250	TOWN MEETINGS	48	64	0	38	48	0	198	$ 24,827.00
300	25% HIGHWAY DESIGN SUBMISSION	28	100	67	154	390	24	763	$ 69,187.25
310	SUPPLEMENTAL SURVEY	3	15	40	348	74	420	900	$ 64,790.00
350	DESIGN PUBLIC HEARING	4	4	0	12	0	24	44	$ 3,652.00
400	75% HIGHWAY DESIGN SUBMISSION	0	0	0	0	0	0	0	$ -
450	100% HIGHWAY DESIGN SUBMISSION	0	0	0	0	0	0	0	$ -
500	RIGHT OF WAY	0	2	2	12	8	16	40	$ 2,964.50
600	GEOTECHNICAL DESIGN	0	0	0	0	0	0	0	$ -
700	PROJECT DEVELOPMENT - STRUCTURAL	4	4	50	94	56	44	252	$ 21,829.50
710	SKETCH PLANS	0	0	0	0	0	0	0	$ -
750	FINAL BRIDGE DESIGN	0	0	0	0	0	0	0	$ -
800	PS&E SUBMISSION	0	0	0	0	0	0	0	$ -
900	CONSTRUCTION ENGINEERING	0	0	0	0	0	0	0	$ -
	TOTAL WORK-HOURS	99	221	304	816	752	602	2793	
								TOTAL FEE	$ 242,082.50
	ACTUAL PERCENTAGES	4	8	11	29	27	22		
	(TYPICAL PERCENTAGES)	1-3%	10-15%	15-25%	25-35%	10-15%	10-15%		
				DESIGN		CONSTRUCTION			TOTALS
(a) Salary Costs				$ 88,030.00		$ -			$ 88,030.00
(b) Indirect Costs (%)	150.00%			$ 132,045.00		$ -			$ 132,045.00
(c) Net Fee (%)	10.00%			$ 22,007.50		$ -			$ 22,007.50
TOTAL LIMITING FEE				$ 242,082.50		$ -			$ 242,082.50
(d) Direct Expenses									
	VHB			$ 19,000.00					
	Eastern Topographics			$ -		$ -			
				$ 19,000.00		$ -			$ 19,000.00
MAXIMUM PAYMENT AMOUNT				$ 242,082.50		$ -			$ 261,082.50
MAXIMUM OBLIGATION									$ 261,082.50
								SAY	$ 261,000.00

ATTACHMENT B: MassDOT Model Scoping Workbook

Scope of Services: Scoping Workbook 25% design			
Please insert tasks from sections C of the Scope of Services under each category below. Insert estimated hours for each task and project team members/subconsultants who will work on each task.			
	Est.Hours	Team Members Working on Task	Comments
1. Data Compilation	16	Tracie Lenhardt	
Section from Scope: 4.A.a.			
2. Utility Coordination	16	Tracie Lenhardt	
Section from Scope: 4.A.c.			
3. Survey Coordination and Controls	8	Craig Robertson	
Section from Scope: 4.A.b.			
4. Base Plans, Profiles and Typical Sections	28	Tracie Lenhardt, Craig Robertson	
Section from Scope: 4.A.b.			
5. Field Reconnaissance	352	Craig Robertson	
Section from Scope: 4.A.b.			
6. Plot Existing Layout Lines	36	Craig Robertson	
Section from Scope: 4.A.d.			
7. Meetings and Liaisons	19	Trish Domigan/Tracie Lenhardt	
Section from Scope: 4.			
8. Determine Roadway Cross Sections	n/a	Tracie Lenhardt	
Section from Scope: 4.B.a.			
9. Preliminary Horizontal Geometry	8	Tracie Lenhardt	
Section from Scope: 4.B.a.			
10. Preliminary Vertical Geometry	12	Tracie Lenhardt	
Section from Scope: 4.B.a			
11. Cross Section Studies	26	Tracie Lenhardt	
Section from Scope: 4.B.c.			
12. Prepare Cross Sections	36	Tracie Lenhardt	
Section from Scope: 4.B.c.			
13. Plot Proposed Layouts and Easements	10	Tracie Lenhardt	
Section from Scope: 5.			
14. Pavement Designs	n/a		
Section from Scope: n/a.			
15. Typical Sections	12	Tracie Lenhardt	
Section from Scope: 5.			
16. Construction Details	12	Tracie Lenhardt	
Section from Scope: 4.B.a.			
17. Preliminary Drainage and Utility Studies	8	Tracie Lenhardt	
Section from Scope: 4.B.c			
18. Traffic Signals	20	Eric Thompson	
Section from Scope: 5.			
19. Signs and Pavement Markings	12	Erin Thompson	
Section from Scope: 5.			
20. Traffic Management	8	Erin Thompson	
Section from Scope: 5.			
21. Early Environmental Coordination	73	Gene Crouch	
Section from Scope: 5.			
22. Constructability Review	6	Don Cooke/Bill Desantis	
Section from Scope: 4.			
23. Quality Control Review	24	Don Cooke/ Bill Desantis	
Section from Scope: 4.			
24. Preliminary Construction Estimates	34	Tracie Lenhardt	
Section from Scope: 5.			
25. Submission Check List	2	Tracie Lenhardt	
Section from Scope: 4.B.b			
26. Modifications and Revisions	22	Tracie Lenhardt/Erin Thompson	
Section from Scope: 4.B.e.			
27. Value Engineering	n/a		
Section from Scope: n/a			
28. Public Hearings	44	Trish Domigan/Tracie Lenhardt	

Additional Scope Items for full MassDOT 25% Design submittal and Environmental Permitting

29. Functional Design Report	209	Tracie Lenhardt/ Erin Thompson	
Section from Scope: 5.			
30. Wetland Flagging	116	Gene Crouch	
Section from Scope: 4.A.a.			
31: File ANRAD	48	Gene Crouch	
Section from Scope: 4.A.g.			
32: Project Development	8	Trish Domigan/ Tracie Lenhardt	
Section from Scope: 4.B.b.			
33. Preliminary ROW Plans	40	Tracie Lenhardt	
Section from Scope: 5.			
34. Miscellaneous Plans	36	Tracie Lenhardt	
Section from Scope: 5.			
35. Supplemental Survey	900	Craig Robertson	
Section from Scope: 4.A.a.-f.			
37. Project Development - Structural	252	Kris Kretch	
Added			

ATTACHMENT C: Sudbury Scoping Workbook

Scope of Services: Scoping Workbook Sudbury Specific 25% Design				
Insert estimated hours for each task and project team members/subconsultants who will work on each task. These tasks may already be included in the MassDOT tasks and if so should be omitted and an "x" placed in the second column.				
Full description of Scope can be found on Page 9	If included in MassDOT scope please place a "X"	Est Hours.	Team members Working on Task	Comments
D-1 Hold meetings with Town boards, commissions, departments, residents, abutters, MassDOT, utility companies, etc., and maintain subsequent consultations throughout the duration of the project as needed to advance the project.		116	Trish Domigan/Tracie Lenhardt/Erin Thompson/ Bill Desantis/ Don Cooke	
D-2 Provide the Town with monthly update/ progress reports.		18	Tracie Lenhardt	
D-3 Town liaison to MassDOT representatives and the Boston MPO.		24	Trish Domigan	
D-4 Meet with abutters to determine privacy and screening needs.		40	Tracie Lenhardt	
D-5 Conduct a Parking Needs/Demand Analysis.		80	Erin Thompson	
D-6 Preparation of cost estimates for the completion of the project.	X			
Complete Alternatives Analysis on Union Ave.		62	Tracie Lenhardt	

ATTACHMENT D: Price Proposal

Town of Sudbury

25% Engineering/Design Services Bruce Freeman Rail Trail

Name of firm submitting:	Vanasse Hangen Brustlin Inc
Contact Person:	Patricia Domigan, P.E.
Address:	101 Walnut Street, Watertown, MA 02472
Telephone:	(617) 607 - 2794
Email Address:	pdomigan@vhb.com

25% Design Services to achieve MassDOT approval as proposed:	$ $222,214
Town of Sudbury Specific Tasks, as proposed in Section D 1 -6: **Only those items not included in the MassDOT proposal*	$ $38,786
TOTAL:	$ $261,000