



March 26, 2018

Cambridge Redevelopment Authority

Annual Transportation Report Kendall Square Urban Renewal Plan



Contents

Responses to Selection Criteria.....	3
Introduction.....	4
Project Understanding.....	4
Approach.....	5
Proposed Project Schedule.....	10
New Report Format.....	11
Demonstration of Experience.....	14
Team Responsibilities and Resumes.....	20

Appendices

A. Budget.....	I-1
B. Resumes.....	I-5
C. References.....	I-19
D. References.....	I-20
E. New Report Format Screen Caps.....	I-21
F. Report Samples.....	I-25
G. Additional Cambridge Experience.....	I-31
H. Required Forms.....	I-35

Technical Proposal





March 26, 2018

Jason Zogg, Project Director
Cambridge Redevelopment Authority
255 Main Street, 8th Floor
Cambridge, MA 02142

Re: VHB Proposal for the Annual Transportation Report | Kendall Square Urban Renewal Plan

Dear Mr. Zogg:

For the past 20+ years, the Cambridge Redevelopment Authority (CRA) has been tasked with conducting an annual traffic study and analysis of the Kendall Square Urban Renewal Plan (KSURP) area and producing an Annual Transportation Report. As one of the most walkable, transit-rich, and bicycle-friendly cities in North America, the analysis and consequent report is imperative to maintaining and improving mobility conditions. The CRA is looking for a refreshed, innovative, yet intuitive report that reflects the multi-modal goals of the City of Cambridge and will serve as the base for future transportation planning. VHB offers comprehensive experience in data analysis and reporting, familiarity with the Kendall Square area, and an integrated services team to meet the needs of the CRA and the City of Cambridge.

Integrated Services Team. As we built our team, we had a few goals in mind: fresh ideas, innovative approaches, top technical leaders with a deep understanding of transportation planning and operations, but most important, responsiveness. Our convenient office locations in Boston and Watertown make it easy for site visits, team meetings, and public outreach. Led by **Project Manager and Transportation Technology Leader Albert Ng, ENV SP**, our team is comprised of transportation planners, data scientists, traffic engineers, CAD/GIS specialists, intelligent transportation systems (ITS) engineers, and graphic designers. This integrated team sits under a single roof, making for efficient coordination and collaboration. For close to two decades, Albert has specialized in the evaluation of transportation systems, complex data analyses, integrating transportation technology, and presenting information to stakeholders to inform policy and program decision-making. **Principal-in-Charge, Susan Sloan-Rossiter, ENV SP, NICIP**, brings more than 40 years of transportation planning, permitting, and management experience, and will provide project oversight. Susan has focused much of her career on transportation-related projects throughout the City of Cambridge and will prove to be an invaluable asset to the team. Our talented professionals will work together to turn your visions into reality.

Knowledge of Kendall Square and the City of Cambridge. VHB's Watertown- and Boston-based engineers and planners focus on the City of Cambridge where innovative, technically challenging and sustainable projects are rapidly changing the face of the City. We have worked with public- and private-sector clients

Engineers | Scientists | Planners | Designers

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throughout the City to provide transportation planning and engineering, traffic studies, civil engineering, permitting, and conceptual designs. Projects include the KSURP, the Binney Street Project, Kendall Square Rezoning, Alexandria Center at Kendall Square, NorthPoint Development, MIT Kendall Square Development, and University Park, to name a few. Our work has given us a deep understanding of local and state processes and municipal priorities.

Preparation of Reports and Studies. The key to successful preparation of reports and studies is fully understanding the traffic and transportation issues associated with particular concerns/locations, as well as the ability to convey those issues in a clear, concise fashion. Regardless of the medium, VHB offers services that support traditional reporting medium (e.g., reports and PowerPoint presentations), but has extensive experience in digital media such as ArcGIS online mapping and StoryMaps, websites, and phone apps. VHB has significant experience developing solutions for clients incorporating Geographic Information Systems (GIS) applications, database design, software customization or development, web-based project management, and network and systems design consulting.

Our experienced team of technical professionals are ready to apply our skills and dedication to complete this exciting project. Should you have any questions about this submittal or require any further information, please contact Albert at ang@vhb.com or 617.607.2922. Thank you for the opportunity to submit this response, and we look forward to supporting you on this important initiative.

Sincerely,
VHB

A handwritten signature in black ink, appearing to read "Albert Ng".

Albert Ng, PTP, ENV SP
Project Manager
ang@vhb.com

A handwritten signature in blue ink, appearing to read "Mike Regan".

Mike Regan, PE, PTOE
Managing Director of Transportation Planning and Operations
mregan@vhb.com

VHB Responses to Selection Criteria

REQUIREMENT	VHB RESPONSE
<p>✓ 1 Quality of Previous Work</p>	<p>We will deliver results as demonstrated by strong performance on similar past projects, an integrated services team with a deep bench of local talent under one roof, and unparalleled understanding of the myriad players in the public and private sectors. We will leverage our strong connections with not only the City, but MassDOT, the MBTA, developers, and stakeholder community.</p>
<p>✓ 2 Experience and Qualification of Firm and Personnel</p>	<p>We have developed a Project Leadership Team, led by Susan Sloan-Rossiter and Albert Ng, to maintain direct communication with the CRA and manage our strong multi-disciplinary team. This Project Leadership Team will be supported by a team, prepared to deliver high-quality work on-time and within budget.</p>
<p>✓ 3 Proposed Improvements and New Format</p>	<p>We have presented our initial thoughts on potential improvements to the data collection program and reporting. We look forward to collaborating with the CRA to develop a compelling and complete mobility data platform.</p>
<p>✓ 4 Graphic Representation Capabilities</p>	<p>VHB's in-house graphic design and applied technologies team works with our clients to translate complex concepts into compelling visuals and materials through traditional and digital mediums. To ensure a proper fit between client needs and final product(s), VHB works closely with clients and considers communications that will best convey their overall vision and goals.</p>
<p>✓ 5 Quality of References</p>	<p>We encourage the CRA to contact our clients to discuss the quality of work, timeliness of submissions, adherence to project schedule, coordination with stakeholders, as well as our sensitivity to our clients' needs. We are certain you will hear our commitment, and responsiveness to our clients is unmatched.</p>
<p>✓ 6 Budget</p>	<p>We believe our budget is complete, competitive, and appropriate for the anticipated tasks outlined in this proposal.</p>
<p>✓ 7 Timeliness and Capacity</p>	<p>Project Manager Albert Ng and his team of key personnel are within twenty minutes from your offices. Our team is available immediately and will be dedicated to this project for the duration of the effort.</p>

Introduction

Technology, culture, and communities are evolving at a breakneck pace and our transportation system is at the crossroads of these social and technological changes. A key piece of that challenge is the quantity and quality of the data that becomes available and how to make it discernable and relevant for stakeholders with different needs and levels of understanding. Organizations like the Cambridge Redevelopment Authority (CRA) needs expert, resourceful, and adaptable professionals to help guide it through this exciting, evolving, and uncertain time. VHB is well qualified to help build upon the CRA's success and help position you for the future.

Over the next five to 10 years, Cambridge and Boston's metropolitan area will experience a staggering number of transformative projects, many of which will have an impact on the CRA and its interests, particularly within Kendall Square and adjacent neighborhoods. Further, technology driven mobility options will add to the opportunities and complexities of the transportation system, changing the way data is collected and how it's processed. Given its integrated services team and experience in Kendall Square and regionally, VHB is positioned to provide the CRA with a complete data reporting solution that streamlines the data collection process and crafts a curated mobility story of Kendall Square.

Project Understanding

The CRA is embarking on an exciting opportunity to turning its wealth of legacy data, collected as part of a regulatory requirement, into a valuable resource from which many stakeholders will benefit. It's an opportunity to supplement the existing legacy data with multi-modal data, in keeping with the City's goals for enhanced mobility for multiple modes of travel and mixed land uses.

Four key challenges in the upcoming years:

1. Making the data relevant
 - Align data and reporting with CRA goals and objectives
 - Understand the needs of the stakeholders
2. Managing the data
 - Develop system to warehouse data
 - Keep the data in an easily retrievable format and develop file management strategy
3. Benchmarking the data
 - Set up the data so that it will be useful for years to come (given new mobility opportunities)
 - Keep past data relevant and use to show growth and changes
4. Making the data understandable
 - Visualize and set up the data to support different stakeholders needs

Approach

VHB’s seamlessly integrated team combines its best and brightest from our applied technology team of information technology professionals and its transportation planners, data scientists, and analysts to successfully deliver data-driven solutions for our clients. Given the project scope, scale, budget and time frame, it is critical for the team charged with the project’s success to have a comprehensive vision of the data life-cycle, from its origins (when and how its captured); through its storage, processing, and analysis; all the way to its reporting and role in decision-making, capital expenditure, and policy development. Given our deep bench of technical professionals—both information technology and transportation— we will provide a comprehensive review of current and available data sources, help to determine if these data sources can sufficiently represent activity within Kendall Square, and identify how these measures can play a key role in transportation planning and project development for the CRA and City of Cambridge.

Figure 1 below is a chart presenting the end-to-end data lifecycle and how VHB’s services can support the CRA in collecting, managing, reporting and visualizing data to support transportation reporting for Kendall Square and the CRA’s goals and objectives.

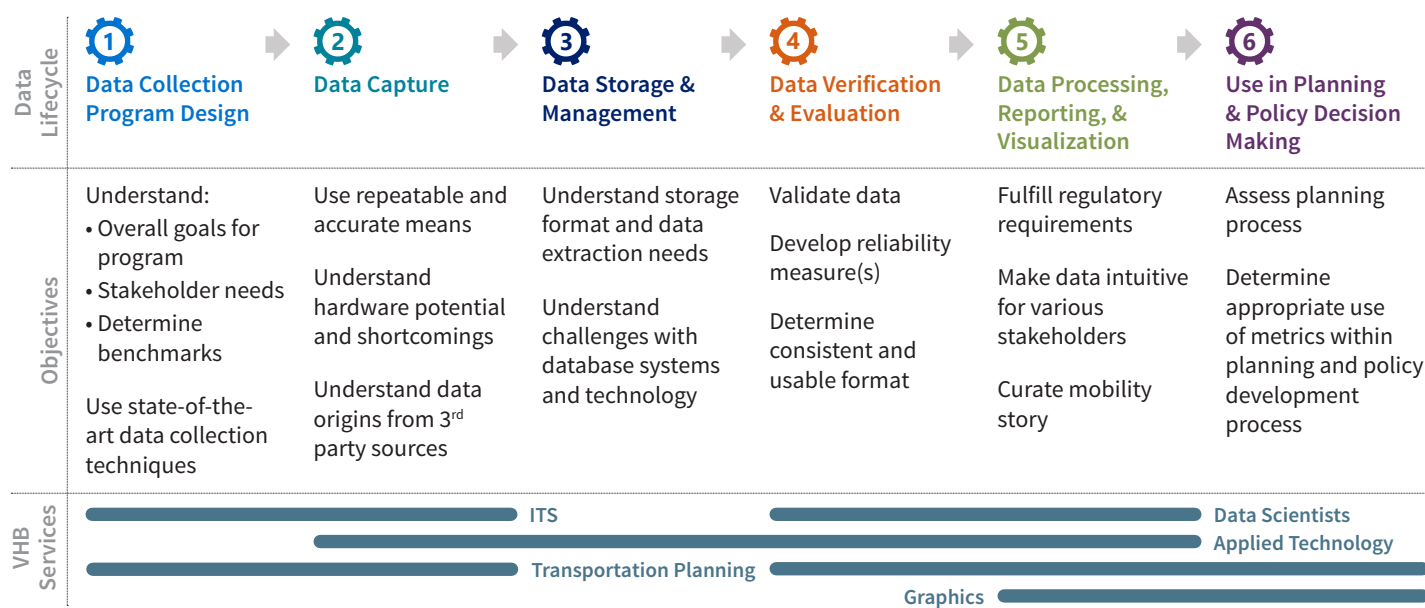


Figure 1. End to End Data Reporting

VHB’s services cover all of the major phases of the data lifecycle. We have all the resources and expertise in house to help the CRA throughout the duration of this project.

The following are VHB’s understanding of the objectives for each task, additional considerations, work elements and deliverables for scope years 1, 2, and 3.

Scope Year 1

Task 1

Task 1 includes the collection of data to help demonstrate the impact on the Kendall Square transportation system due of the opening of the Longfellow Bridge. It's an excellent opportunity to conduct a before and after study of both the roadway network and transit system to understand if the closing of the bridge has produced long term demand changes on the transportation system. VHB's transportation planners and data scientist will design a thoughtful and thorough data collection program to support a study of these impacts. VHB built a travel demand model for the Charles River basin, analyzing resulting traffic patterns from closures of the bridges, including the Longfellow Bridge, from MassDOT.

Objective

- Collect data prior to and after the opening of the Longfellow Bridge.

Additional Considerations

- Factors influencing count dates
 - Opening of bridge
 - MIT academic calendar (Last day of classes May 17)
 - City of Cambridge school calendar (Last day of school June 22)
 - PTDM school vacation weeks
 - Consistency with count dates from prior reports
 - General seasonal variation
- Monitor Red Line activity to see if there is a drop in utilization post-bridge opening (when Red Line service normalizes)

Work Elements

- Set up data collection effort before and after Longfellow Bridge opening (note: two data collection efforts parallel to legacy data collection efforts)
- Work with CRA to determine appropriate count dates

Deliverables

- ✓ **Project management meeting notes**
- ✓ **Collected data in raw form**
- ✓ **Technical memorandum providing:**
 - ✓ Overview of data collection approach and methodology
 - ✓ Summary of ex-ante and ex-post facto volumes

Task 2

Task 2 provides an opportunity to take a fresh look at the means and methods of data collection and reporting to comply with the annual MEPA traffic study and analysis requirements. In addition, it's an opportunity to leverage and build upon the legacy data and provide a more wholistic view of mobility within the KSURP area to support CRA and stakeholder equity, transportation, and development objectives. Engagement with the CRA, other city departments (CDD, TPT, DPW) to understand the specific overarching goals of the effort and how we may be able to leverage other current efforts. Having VHB's multidisciplinary integrated services team will help the CRA develop a comprehensive data collection

program, with potentially new data streams from state of the art multi modal collection methods. VHB was indirectly involved with the eK2C2 study and is a regular attendee at the City's Kendall Square Transit Advisory Committee meetings. We are well aware of the transit concerns and interests of the community.

Objective

- Provide vision for data collection and reporting process
- Determine and justify additional/revised data needs

Additional Considerations

- It is critical to align the goals of this collection and reporting mechanism with the overarching mission of the CRA.
- Align data collection program with review and support of current and future City/CRA policies.
- Define stakeholders, their interests, and whether the data collection program and reporting mechanism can/should support them.
- Define end-to-end process, inputs/outputs, and desired outcomes for entire data lifecycle.
- Consider current and future mobility options and how data collection program will be inclusive of these.
- Opportunities to stream line and standardize tenant surveys

Work Elements

- Host kick-off meeting with project team
 - Discuss overarching project goals and objectives and how data collection effort and reporting can align with CRA overarching goals.
 - Determine key points CRA would like to convey regarding mobility within and through the Kendall Square area.
 - Determine audience for curated narrative.
- Meet with key stakeholders during discovery phase to understand needs and how they may leverage data and/or help provide supplemental information
- Host meeting to discuss data management, storage, and access platform
- Analyze strengths and weaknesses of current data collection effort and report
- Provide recommended annual data collection program and reporting including:
 - Opportunities for new data streams
 - Responsible parties and availability for provision of data
 - How data supports project and CRA goals
 - How data aligns with historic data

Deliverables

- ✓ **Kick-off meeting notes**
- ✓ **Data management meeting notes**
- ✓ **Project management meeting notes**
- ✓ **Improvements memorandum and PowerPoint presentation providing overview of key findings including:**
 - ✓ Analysis of strengths and weaknesses of current data collection and reporting program
 - ✓ Recommended changes to data collection effort
 - ✓ Justification for new data streams, responsible parties, barriers, and annual cost
 - ✓ Recommended platform and reporting tools

Task 3

Task 3 provides an opportunity to revisit the KSURP cordons to see if there are opportunities to expand the scope of the data collection effort as development starts to push outside of the existing KSURP boundaries and new supporting infrastructure is in place.

Objective

- Review opportunities in revising geographic coverage area
- Determine overall value and trade-offs revising coverage area to CRA and other stakeholders, considering previous permitting obligations and legacy data

Additional Considerations

- Consider future infrastructure improvements
- Drawing true cordons to track “ins and outs” of area
- Consider leveraging other monitoring and collection efforts by others

Work Elements

- Host charrette to discuss geographic coverage area opportunities and barriers
- Estimate and compare cost of data collection effort to support each geographic coverage area (up to three)
- Review existing reporting efforts by others including TPT and developers to determine opportunities for sharing resources

Deliverables

- ✓ **Project management meeting notes**
- ✓ **Charrette meeting notes**
- ✓ **Presentation providing:**
 - ✓ Overview of goals and process to develop geographic coverage area options
 - ✓ Description of coverage areas
 - ✓ Comparison of strengths and weaknesses of coverage areas including data collection opportunities and barriers
 - ✓ Cost comparison between data collection programs for respective coverage areas
 - ✓ Recommendation for geographic coverage area

Task 4

Task 4 enables the project team to envision the future “report” delivery medium for the Kendall Square mobility data platform. VHB’s in-house integrated services team ensures that communication and comprehension are efficient and thorough. Our team regularly delivers projects using digital and traditional mediums to effectively communicate with a range of stakeholders.

Objective

- Develop mockups (format and structure) of multimedia platform of future reporting instrument(s)
- Develop brand identity for “report”

Work Elements

- Hosted charrette with CRA and VHB (Transportation Planning, Applied Technologies and Graphics team) to:

- Storyboard “report” content
- Branding and identity exercise
- Discuss technology platform and capabilities
- Develop brand and identity package for new “report”
 - Including name and logo
- Provide preliminary table of contents
- Mock up PowerPoint Sideshow
- Mock up “paper” report format
- Mock up online interactive website
- Mock up storyboard of explanatory video report

Deliverables

- ✓ **Project management meeting notes**
- ✓ **Charrette meeting notes**
- ✓ **Table of Contents outline**
- ✓ **Electronic mockups for PDFs, StoryMaps, Videos, and PowerPoints**
- ✓ **Budget for each medium**

Task 5

Task 5 provides an opportunity to bring the efforts of the first year together and set up the subsequent year’s data collection and reporting efforts for success.

Objective

- Develop work/implementation plan for years 2-3

Work Elements

- Develop work schedule for subsequent year
- Summarize effort in Implementation memo

Deliverables

- ✓ **Project management meeting notes**
- ✓ **Implementation Plan memorandum drawing from results of previous tasks including:**
 - ✓ Data collection strategy (Task 2)
 - ✓ End to end data lifecycle (Task 2)
 - ✓ Geographic coverage area (Task 3)
 - ✓ Explanatory overview of reporting medium(s) (Task 4)
 - ✓ Communications plan
 - ✓ Overall detailed 12 month work schedule

Scope Years 2 and 3

While the scope for years 2 and 3 are to be better defined through Task 5 of year 1, there are some fundamental pieces that will be executed and provided. VHB has provided an allowance for this effort, understanding that it is subject to change per findings from Task 5.

Objective

- Carry out implementation plan developed in Task 5

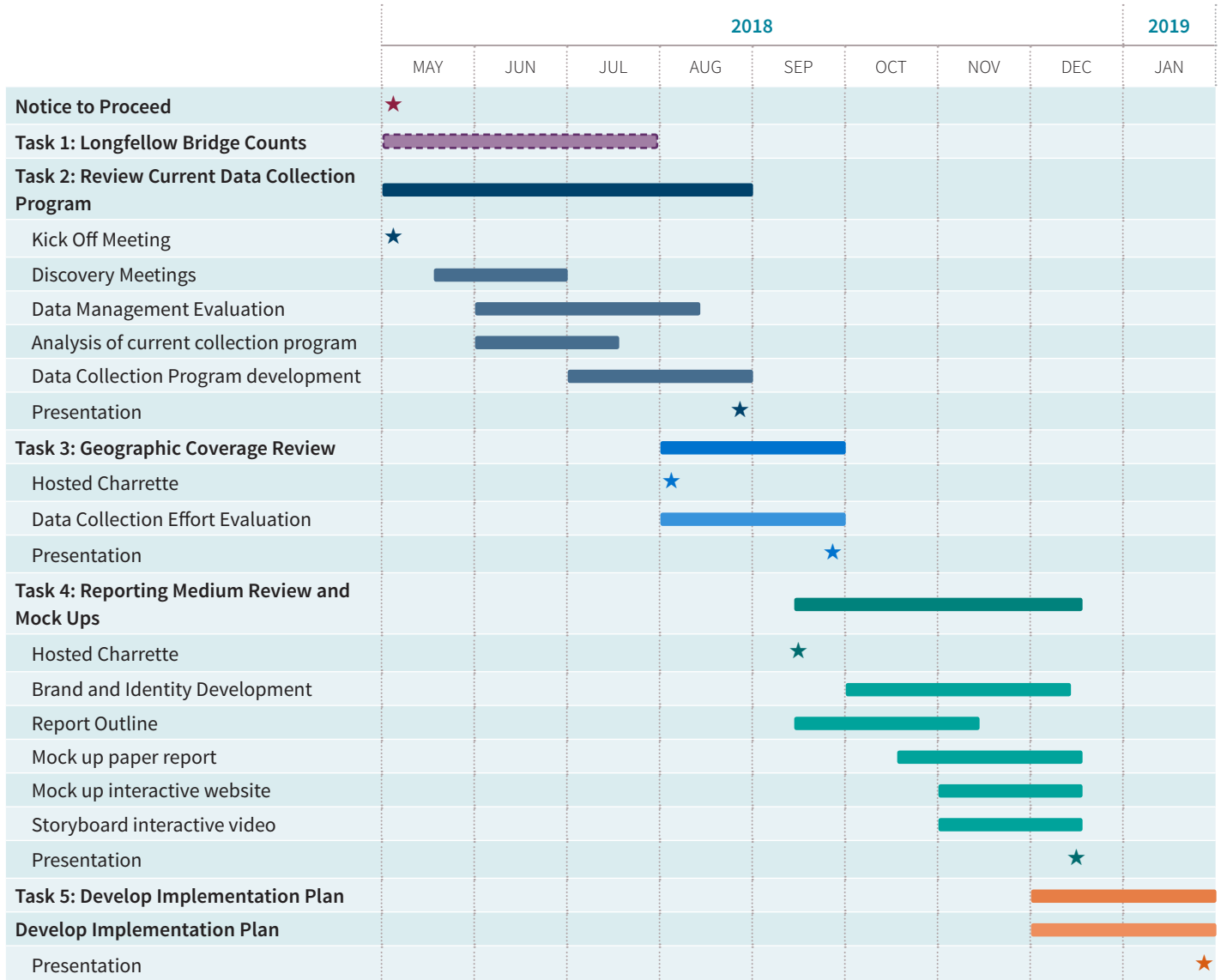
Work Elements

Note: these tasks are subject to findings from Year 1’s Task 5. The task list below or overall scope for years 2 and 3 may change be subject to change.

- Tasks include:
 - Data collection and verification
 - Analysis
 - Report writing and visuals
 - Creation of deliverables in media
 - Feedback system to capture stakeholder recommendations
 - Produce Action Review and Continuous Improvement/Lessons Learned Memo (year 2)
 - Explanatory video (year 3)

Proposed Project Schedule

Please see below for our proposed Year 1 project schedule.



New Report Format

This project will pair an enhanced data set, based on the revised data collection program, with new media to present the state of mobility in Kendall Square. We envision that the new data collection program, designed by VHB, will provide a snapshot of all travel into, through and out of Kendall Square by all modes, to understand who comes to stay and who is passing through.

Innovative Data Collection

VHB prides itself on keeping up-to-date on the latest innovative data collection techniques. Our ITS group is well versed on the latest data collection techniques using Bluetooth signals, infrared, and other technologies to capture data on pedestrians, bicyclists, and vehicles. The state of transportation is evolving quickly and it's clear that the capture of data and the availability of data is accelerating along with it. Our transportation analysts can take real-time data streams, analyze them, and present them in a real, relatable way. On the MassDOT GoTime project, VHB's applied technology and transportation team took Bluetooth data streams and curated it into real-time travel time updates for a public facing application. Further, VHB proposes to help streamline the collection of mode share data through a standardized online survey. Given the sensitivity of individual data, we suggest that the data be aggregated at the building level. Standardization of the data collection would help simplify the process, ensure consistency with how the data is received, reducing transcription errors. As new buildings come online (e.g., 145 Broadway and 250 Binney Street), they will be subject to PTDM requirements, providing a richer set of mode share data. VHB's experience with PTDM survey requirement can lend itself to a consistent data result and improved response rate.

Data Opportunities

Existing Count Program

- Develop true cordon count by including vehicle count station on roadways such as:
 - Broadway west of Galileo Way;
 - Binney Street north of Broadway; and
 - Ames Street South of Main Street.
- Separate TNC's in pick up drop off counts
- Update adjusted ITE Trip generation rates
- Use of infrared video cameras to monitor multi-modal activity

New Data Opportunities

- Capture Zipcar utilization data from 77 Ames Street vehicles
- Use VHB ArcGIS outreach tool to solicit state of mobility within Kendall Square
- Work with parking garages to understand what data is captured with every transaction.
 - Parking duration/turnover
 - License plate recognition...frequency and user classification (commuter vs. transient)
- Before and after bicycle activity (on-road and separated) based on new facility installation (e.g., Binney Street)
- Hubway data set to track origin and destination to inform additional bicycle infrastructure investment, placement of bicycle parking, etc. to reduce bicycle/vehicle/pedestrian conflicts
- Bluetooth detection applications for travel time and origin/destination (e.g., <http://trafficcast.com/bluetoad.html>)
- Investigate new infrared detection and monitoring devices to track vehicles, bicycles, and pedestrians (e.g., <https://www.flir.com/products/trafione/>)
- Transit
 - MBTA data
 - Boardings and alighting
 - Automated vehicle locator to track travel time
 - Reliability data
 - Schedule and tracking APIs
 - EZ Ride
 - Work with Charles River TMA to obtain boarding and alighting data
 - Shuttle bus service and ridership

New Report Format Outline

Land Use Changes

- Building Openings
- Construction Activity

Transportation Infrastructure Changes

- Roadway projects
- Bicycle accommodations
- Pedestrian walkways and connections
- Transit
 - Infrastructure
 - Service Changes
 - Private Shuttles

Mobility Activity

- Vehicular Movements
 - Cordon Vehicular Movements
 - Drop-Off/Pick-Up
 - Personal vehicle
 - Transportation network company (TNC) activity
- Parking Activity
- Transit Activity
 - MBTA Services
 - Ridership
 - Kendall Station Activity
 - Service Reliability
 - Line-haul analysis

- Platform Observations
- EZ Ride
 - Ridership
 - Service

- Bicycle Activity
 - Cordon Vehicular Movements
 - Eco-totem activity (Broadway)
- Safety
 - City of Cambridge Crash Data Analysis
- Mode Share
 - Tenant/Employee Travel Mode Survey
- On-line outreach results

Mobility Trends

- Movements into Kendall Square vs through Kendall Square
- Trip Generation Analysis
- Vehicular Volume
- Changes in Mode Share
- Crash trends
- Opportunities
 - Data collection
 - Infrastructure Improvements
 - Short-term
 - Long-term

Conclusions

Incorporating Existing Data from Others

A comprehensive understand of an area's (like Kendall Square) mobility requires a great deal of data. As such, any data that we can leverage from others would help to reduce cost and collection time. It's also critical to be familiar with the data sources and have experience working with it to understand its shortcomings and what metrics can be drawn from it. VHB has worked with many of the MBTA data sources including passenger boarding and alighting, automated vehicle location data (AVL), and can work with the MBTA's APIs to extract and present real-time data. Additionally, VHB will look to incorporate additional information from the City of Cambridge (e.g., biennial bicycle counts) as well as other data from municipal and state sources.

In addition, VHB has worked with many companies and institutions to fulfill their City of Cambridge PTDM and travel survey requirements. As such, we are well versed on the challenges of this type of data collection and processing and can recognize inconsistencies and red flags in the data.

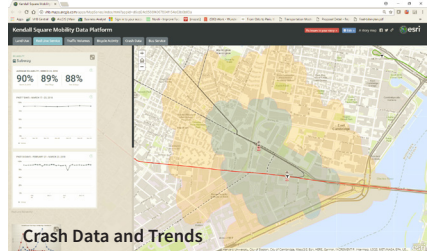
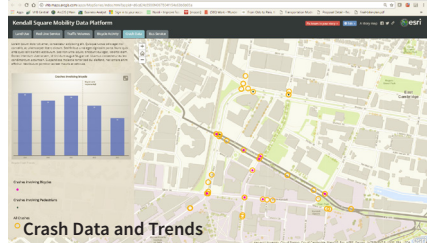
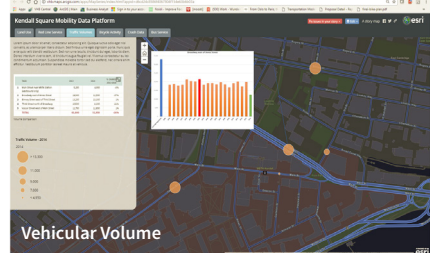
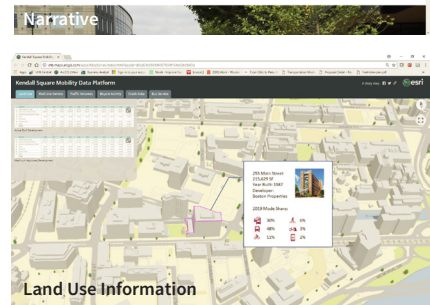
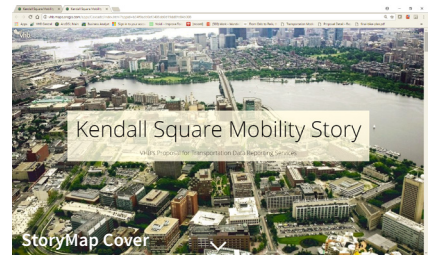
Presentation of Data through traditional and digital medium

“The goal is to turn data into information and information into insight.” - Carly Fiorina

VHB has a long history of presenting complex data through various mediums. Whether it's reports, PowerPoint presentations, infographics, maps, phone apps, websites, or StoryMaps, VHB has done it all. We understand how critical it is to both communicate information and extract the information into insights to support policy changes or investment decisions. Through this project, VHB will help the CRA curate the data into a story about the current (and future) state of mobility in Kendall Square. Above, we presented a suggested outline for the first report.

To help the CRA visualize the Story Map, VHB has mocked up the Story Map format along with some data that could be incorporated into the medium. Some highlights:

- » ArcGIS online’s Story Map tool aligns with the City of Cambridge’s GIS interest and investment. We anticipate using this technology.
- » The user will be introduced by a compelling image of Kendall Square, perhaps presenting changes to land use or infrastructure and/or people and places within the area.
- » Narrative will be used to inform and shape the story, leading the user through the observed changes from year to year, examining the reasons for changes in trends, and highlighting the success of policy and program changes by the CRA and the City of Cambridge.
- » While this is a story highlighting mobility, it is important to draw mobility’s intersection with land use. As such, year-to-year land use changes, building program, and relevant data such as mode share by parcel (if available) will be presented.
- » VHB will take the legacy data and present it in a relevant and intuitive way, showing short and long term trends. If possible, VHB will create a true cordon count for all modes and demonstrate how many trips are destined for Kendall Square versus how many trips are through-trips.
- » The City of Cambridge has collected a significant amount of crash data. VHB would use that data to demonstrate crash trends by modes.
- » Data from the MBTA will be pulled in to present reliability metrics, ridership, peak hour activity, and travel times.
- » VHB will work with mobility service providers to leverage additional mobility data from counters and services like the eco-totem, ZipCar utilization and activity, and Hubway to understand movement within and throughout the area.



Note: Full-sized images in Appendix D

Demonstration of Experience

VHB has been providing professional engineering services to Massachusetts municipalities for nearly 40 years. More than 240 communities throughout the Commonwealth have relied on VHB for their planning, transportation, and environmental needs. VHB's Watertown- and Boston-based engineers and planners focus on the City of Cambridge where innovative, technically challenging and sustainable projects are rapidly changing the face of the City. VHB supports clients' visions of a thoughtfully designed project integrated into the urban fabric. We have developed an unparalleled resume of work that has resulted in a deep understanding of local and state processes and municipal priorities.

Our experience with KSURP and adjacent areas is unparalleled. VHB has been involved with many of the area's developments including, KSURP itself, Tech Square, MIT development in Kendall Square, One Kendall Square, Alexandria Center, Biogen Idec World Headquarters, 300 Binney Street, 145 Broadway, 250 Binney Street, and was proud to be the team to bring the Kendall Square Transit Enhancement Program (KSTEP) to fruition. Whether new construction or redevelopment of an underutilized site, VHB's talented transportation, planning, civil engineering, and survey professionals help our clients turn visions into reality. VHB works hand-in-hand with officials, architects, developers, attorneys, and construction managers who are shaping the City of Cambridge.

Qualifications

Transportation Planning. As one of the nation's most experienced multi-modal planning, design, and implementation firms, VHB has assisted improvement districts, counties, municipalities, transit authorities, and state transportation departments with a wide array of services. Our integrated approach has allowed us to provide focused information for our clients, whether gathered through multi-modal studies, comprehensive transportation plans, alternatives analyses, feasibility studies, or impact analysis statements, as well as compliant permitting documents involving extensive passenger analyses. As a leader in gathering and analyzing transportation data, our techniques utilize information from existing sources, effectively developing new data and gaining a unique understanding of the transportation landscape in a cost-effective manner. We know that the sharing of data and the appropriate use of technology play major roles in the way people travel and our team offers innovative technology-based solutions and mobile application technology, combined with a deep understanding of the ways people travel.

Our transportation planners play a pivotal role, grounding the technology and data to the practice. We are able to distinguish which reliability metrics are relevant to decision makers within the planning process context.

Intelligent Transportation Systems (ITS). VHB is a recognized leader in the planning and design of innovative transportation technology solutions and ITS projects. With staff in the forefront of advanced transportation management systems and ITS applications for projects from Maine to Florida, VHB has been responsible for the preparation of ITS feasibility studies, conceptual and final design of ITS projects, incident management plans, ITS Architecture updates, development and implementation of ITS technologies along diverse corridors or portions of corridors, design of ITS as a component of traffic management plans, and TMC design, planning, and operations.

VHB has designed numerous ITS field devices to push and pull information to/from vehicles and has first-hand experience using the data captured from new technology data streams such as Bluetooth. VHB utilized Bluetooth data on its MassDOT GoTime app to provide users with real-time travel time data on the Massachusetts Turnpike. Our ITS professionals understand the hardware with which the data is captured, how and what is measured and the potential opportunities and/or shortcomings of each data stream coming from ITS sources.

Applied Technologies. At VHB, applying innovative technologies to better serve our clients is not new to us; for more than 35 years, our professionals have brought creative, leading-edge ideas and tools to yield efficiencies, as well as cost and time savings, on projects. To help facilitate this, we have an in-house Applied Technologies services group composed of 50+ information technology (IT) professionals. This team is charged with not only providing internal support for VHB projects, but also with delivering consulting services directly to clients. In fact, our Applied Technologies group is an integral component of the greater VHB team—and one that is rapidly growing. VHB has developed many GIS, data warehousing, and website based technology solutions for many public and private sector clients, including the MassDOT Complete Streets municipal portal and an interactive StoryMap as part of a solution for the RIDOT Strategic Highway Safety Plan.

Our applied technologies team bridges the data lifecycle, following the flow of data from its sources, through how its managed, through verification process, and how its represented in dashboards or other visualization tool.

Data Scientists. VHB's team of data scientists and analysts are nationally recognized and have played a key role in the development of FHWA guidance manuals (e.g., Pedestrian Safety Guide for Transit Agencies and FHWA GIS Safety Analysis Tools), particularly around vehicular, bicycle, and pedestrian safety. The research and academic approach and results forwarded by our professionals provides the highest order of statistical and analytical validity for FHWA guidance documents which are disseminated for use across the country.

Our data scientists play a key role in the process, using statistical methods and models to clean and validate the data and to follow the methodology outlined in the TRB methodology guidance documents.

Graphics. VHB's award-winning, in-house graphic design team works with our clients to translate complex concepts into compelling visuals and materials. To ensure a proper fit between client needs and final product(s), VHB works closely with clients and considers communications that will best convey their overall vision and goals. Our team has experience working with federal, state, and local organizations to develop a range of specifically tailored materials for individual projects. Aspects of the project can include presentation materials for public outreach efforts, reports and manuals, and project identities that can be used throughout the life of the project. Video, interactive PDFs, mobile/app design, and web pages are additional skillsets that VHB is able to offer its clients, making projects more interactive and engaging.

Relevant Projects

The VHB Team has the right combination of skills and experience in the transportation planning and data analysis of urban transportation systems required by the CRA. We have included selected projects directly relevant to your goals and criteria as outlined in the RFP. These projects demonstrate that the VHB Team has the required skills and technical competence to move your project forward and turn your vision into reality.



Amazon HQ2 Boston, Massachusetts

Client
MassDevelopment

VHB Schedule
Started: 2017
Completed: 2017

Key Personnel
Albert Ng, Project Manager
Terri Courtemarche

Working in conjunction with the Commonwealth of Massachusetts’s Executive Office of Housing and Economic Development and MassDevelopment, VHB played a critical role in assisting the state with developing its bid to win over Amazon and convince the massive online retailer that Massachusetts is the prime location for its eight million square foot HQ2. VHB was tapped by the Commonwealth and MassDevelopment because of our technical excellence and in depth local knowledge of transportation and land development. VHB was instrumental in leading:

- Management of proposal development process including graphics, branding, document production, and online web component.
- An assessment of 23 potential sites in and around the Boston area. Our role began with transportation planning soon expanded to include land development and strategic site advice
- The assembly of potential HQ2 sites that could accommodate Amazon’s needs including: population, talent, and housing data for each proposed site based on the commute catchment area by transit and auto modes.
- Providing guidance on the presentation of transportation investments for the Commonwealth, in close coordination with MassDOT.

<https://www.mass.gov/hq2/>





Kendall Square Experience

Cambridge, Massachusetts

Client

Boston Properties

VHB Schedule

Ongoing

Key Personnel

Susan Sloan-Rossiter
Selma Mandzo-Predzic

From our work with Boston Properties (BXP) in Kendall Square, VHB has a deep understanding of the multi-modal transportation network and infrastructure serving the CRA area having conducted multiple parking and transportation studies and preparing the PTDM plan for the KSURP's two new planned garages.

VHB has worked on the development of several buildings and improved mobility infrastructure in the CRA Kendall Square area having provided transportation planning and engineering services most recently to BXP for the 145 Broadway Akamai headquarters and 250 Binney Street commercial building. Our team was responsible for preparing the transportation impact study (TIS).

VHB also worked with BXP, and the CRA and their legal team to develop a public-private agreement between the City of Cambridge, MassDOT/MBTA, and BXP for funding transit improvements. The newly created Kendall Square Transit Enhancement Program (KSTEP) will be an example for MassDOT for use elsewhere in the Commonwealth.

VHB has teamed with BXP on several developments within CRA Kendall Square, including The Broad Institute and 88 Ames. BXP entrusted VHB to lead the local technical permitting, survey and site/civil engineering for the Biogen Idec 300 Binney Street building as well as The Broad Institute expansion at 75 Ames.

BXP engaged VHB to undertake the transportation planning and engineering for the redesign of Ames Street between Main Street and Broadway, creating a complete street in coordination with the City and the CRA. Further, BXP has engaged VHB to undertake the redesign of the Loughrey Walkway to include a bicycle path and enhanced landscaping. These are critical mobility improvements which provide enhanced connectivity for bicycle and pedestrian movements to and within the CRA Kendall Square area.

Strategic Highway Safety Plan 2017-2021

HOME INTERACTIVE MAPS SAFETY DATA EMPHASIS AREAS ABOUT SHSP FEEDBACK

INTERACTIVE MAPPING
Crash and Response Project Maps
Review serious crash locations and what RIDOT has planned to reduce crashes statewide.

76 **289** **35000+**

Roadway Safety Data
View more data for current trends in roadway safety.

Strategic Highway Safety Plan Rhode Island

Client

Rhode Island Department of Transportation

VHB Schedule

Started: 2016

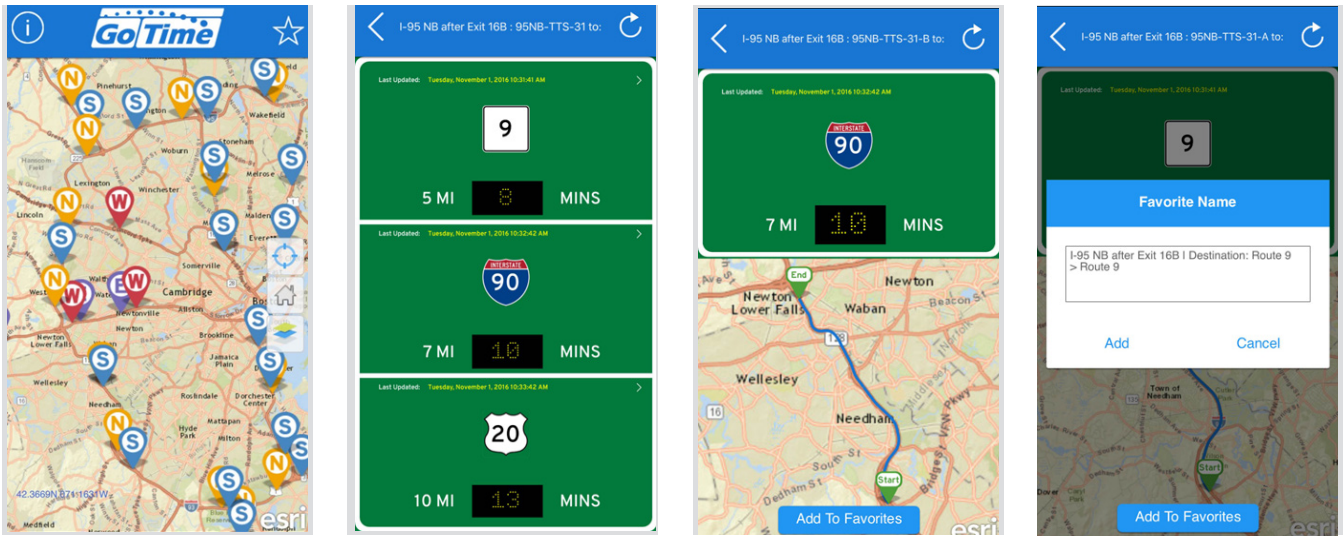
Completed: 2018

Key Personnel

Dale Abbott

Terri Courtemarche

VHB is assisting the Rhode Island Department of Transportation (RIDOT) with a revision to their Strategic Highway Safety Plan (SHSP). To help communicate the goals of the 2017 to 2021 SHSP to the general public, and to serve as a tool for RIDOT safety staff, VHB developed a project website. A critical aspect of the website, is the inclusion of an interactive ArcGIS Online Story Map, which communicates to the public where serious and fatal injury crashes occur, planned projects to help address the roadway conditions where these crashes are occurring, and information on completed roadway safety projects. Story Map to go live in 2018.



GoTime Mobile Application Development Massachusetts

Client

MassDOT

VHB Schedule

Started: 2016

Ongoing

Key Personnel

Applied Technologies

Transportation Systems

VHB worked with MassDOT to design, develop, and deploy a mobile application, titled GoTime. The application complements the ongoing roll-out of the MassDOT Real-Time Traffic Information System (RTTIS), which consists of 700 miles of statewide highway and 137 signs displaying travel times to 300 destinations. It is estimated that close to 2.2 million motorists view the signs daily. The GoTime application enhances the information dissemination objectives of the RTTIS by providing a modern complement to the system.

VHB's objective was to rapidly deploy native mobile applications for both iOS and Android showing the same real-time travel information displayed on the RTTIS signs across the state in a visually appealing and easy-to-use application. As designed, GoTime provides a map based interface that allows users to view the currently posted travel time information for routes on selected RTTIS signs. In addition, users can define, identify, and store favorite routes for rapid access prior to their travel. VHB achieved this by using static route data (link geometry) and dynamic travel time data both provided via the MassDOT RTTIS application programming interface (API) feed. Building against the API allowed for the creation of a solution that seamlessly integrates the Commonwealth's ongoing roll out of additional RTTIS devices (readers and signs) and related travel time data as it becomes available.

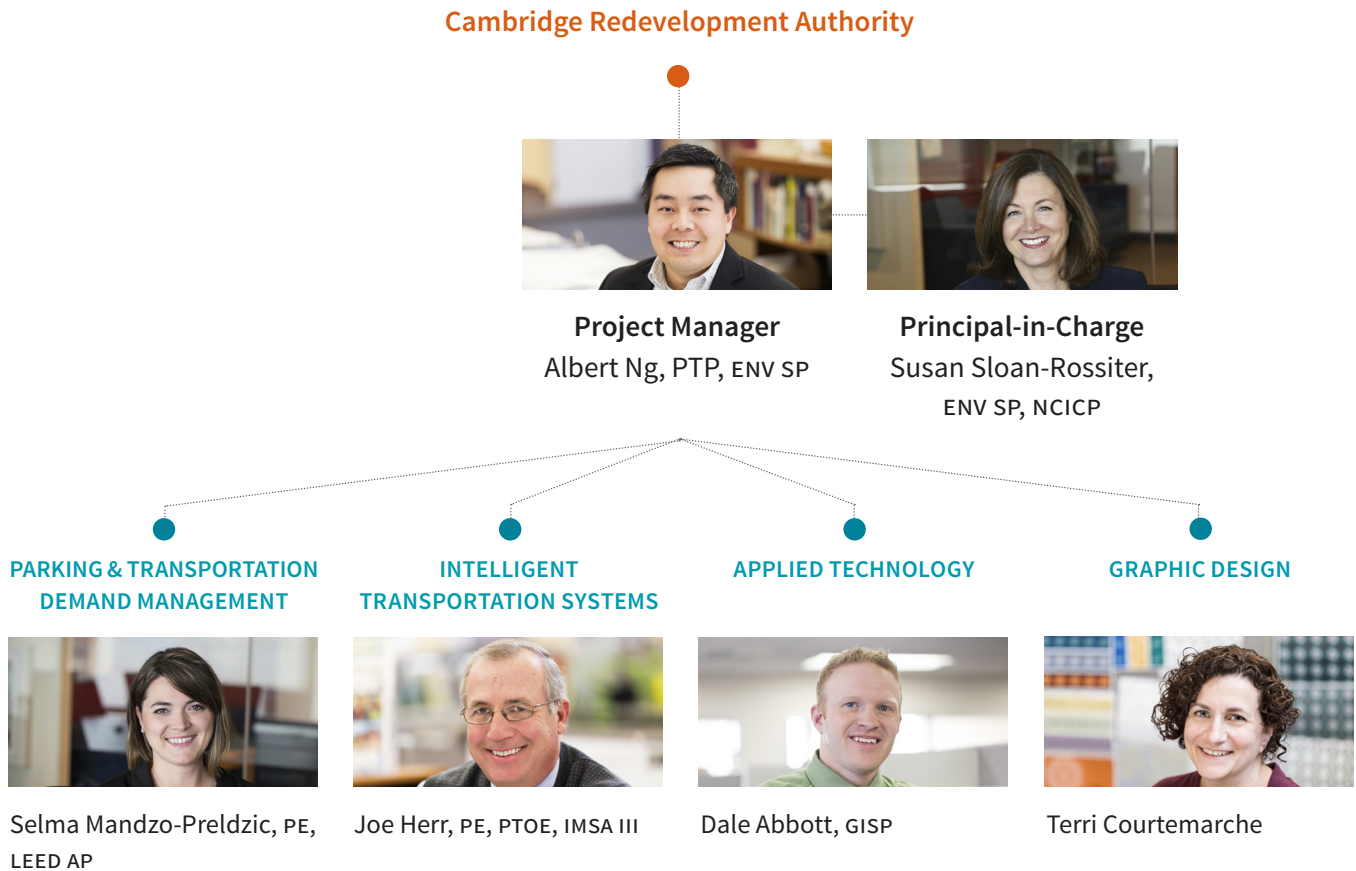
The window for development and testing was extremely tight. The work plan included requirements elicitation and definition, system design, rapid development, and ongoing support and maintenance. VHB successfully balanced the critical project drivers of time to market, functionality, and cost to determine the level of attainable functionality. We deployed an Agile methodology focused on four key areas of work including requirements analysis, system configuration, application development, and deployment. The application was deployed to the Apple Store and Google Play Store November 3, 2016. VHB continues to provide operational support, post deployment.

Team Responsibilities and Resumes

Led by **Project Manager Albert Ng, ENV SP**, our team offers a mix of skills tailored to meet your goals. These professionals bring experience from similar urban projects that will be leveraged to provide the full range of services, including transportation planning, parking and transportation demand management, applied technology and GIS mapping, intelligent transportation systems, and graphic design capabilities, to execute the next generation annual transportation data report for Kendall Square Urban Renewal Plan area.

As a Senior Transportation Planner and Transportation Technology Leader for VHB's Transportation Planning and Operations Department, Albert specializes in the evaluation of transportation systems, complete streets and parking infrastructure as well as the assessment of simple and complex traffic roadway networks, large and complicated multi-phased projects, and general traffic engineering oversight and coordination on various public and private sector projects. Albert is an experienced project manager with extensive experience leading complex and diverse projects for similar Massachusetts communities and state agencies. He will be the primary, operational point of contact for CRA, responsible for technical quality, cost, and schedule performance.

The Organizational Chart below illustrates our team structure and indicates the role each of our key personnel will play in addressing the needs of the Cambridge Redevelopment Authority. The table that follows gives a brief summary of our educational background, specializations, and experience relevant to this project. Resumes, which demonstrate the level of skill and depth of knowledge of our staff, are included in **Appendix B—Resumes**.



Appendix A—Budget





Appendix A

Budget

The following pages contain our budget information.

	YEAR 1 TASKS	LABOR HOURS	COST
1	Longfellow Bridge Counts	214	\$20,700
2	Review Current Data Collection Program	166	\$23,300
3	Geographic Coverage Review	83	\$11,100
4	Reporting Medium Development and Mock Ups	438	\$54,000
5	Develop Implementation Plan	60	\$8,000
	Labor Subtotal	961	\$117,100
	Traffic Counts (Allowance)		\$8,000
	Other (Mileage, Printing, Etc.)		\$2,000
	Total		\$127,100

VHB anticipates that the cost for Years 2 and 3 will fall between \$50,000 and \$70,000, inclusive of labor and expenses (data collection).

Considerations:

- The tasks under Year 1 will greatly inform the scope of Years 2 and 3
- Data collection technologies have not been selected
- Permanent count technology may be desirable thus adding capital expenditures
- Count strategy will determine the amount of labor (manual counts)
- Additional data will be analyzed
- It is anticipated that Year 2 will be higher than Year 3
 - Set up of infrastructure to support data warehousing and reporting
 - Familiarity with data set and lessons learned

Task	Labor Code/ Billing Rate	Principal 3	Principal 1	TP 15	TP11	TP 10	Transport	Applied Tech	Graphics	TP 5	TP 6	TP 7	TP 7	Total
		\$275	\$230	\$180	\$140	\$130	TP 7	TP 7	TP 7	\$80	\$90	\$100	\$100	
TASK 1.0:	Longfellow Bridge Counts													
	1.1 Set up counts	1.0	0.0	2.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	1.2 Observations	0.0	0.0	2.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	122.0
	1.3 Summarize Data	1.0	0.0	4.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	53.0
	Project management/administration	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
	Deliverable production	0.0	0.0	4.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0
	TASK 1.0: Total Hours	3.0	0.0	14.0	0.0	0.0	76.0	0.0	0.0	0.0	0.0	0.0	0.0	214.0
	TASK 1.0: Labor Budget	\$825	\$0	\$2,520	\$0	\$0	\$7,600	\$0	\$0	\$9,040	\$720	\$0	\$0	\$20,705
TASK 2.0:	Review Current Data Collection Program													
	2.1 Kick off meeting	3.0	3.0	4.0	3.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0
	2.2 Discovery Meetings	0.0	0.0	6.0	0.0	3.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
	2.3 Data Management Evaluation	4.0	0.0	1.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0
	2.4 Analysis of Current Collection Program	4.0	0.0	6.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	22.0
	2.5 Data Collection Program Development	0.0	4.0	8.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	28.0
	Project management/administration	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
	Deliverable production	0.0	0.0	4.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0
	TASK 1.0: Total Hours	11.0	7.0	32.0	15.0	29.0	42.0	16.0	0.0	0.0	0.0	0.0	0.0	166.0
	TASK 1.0: Labor Budget	\$3,025	\$1,610	\$5,760	\$2,100	\$3,770	\$4,200	\$1,600	\$0	\$1,080	\$160	\$0	\$0	\$23,305
TASK 3.0:	Geographic Coverage Review													
	3.1 Hosted Charette	4.0	4.0	6.0	4.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	26.0
	3.2 Data Collection Effort Evaluation	1.0	0.0	2.0	2.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0
	Project management/administration	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
	Deliverable production	0.0	0.0	4.0	4.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	36.0
	TASK 3.0: Total Hours	5.0	4.0	14.0	10.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	83.0
	TASK 3.0: Labor Budget	\$1,375	\$920	\$2,520	\$1,400	\$0	\$3,600	\$0	\$0	\$160	\$1,080	\$0	\$0	\$11,055
TASK 4.0:	Reporting Medium review and Mock Ups													
	4.1 Hosted Charette	6.0	0.0	12.0	0.0	12.0	6.0	0.0	6.0	8.0	0.0	0.0	0.0	50.0
	4.2 Brand and Identity Development	0.0	0.0	8.0	0.0	20.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	68.0
	4.3 Report Outline	2.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
	4.4 Mock up paper report	0.0	0.0	8.0	0.0	8.0	0.0	0.0	32.0	0.0	0.0	0.0	0.0	60.0
	4.5 Mock up interactive website	4.0	0.0	8.0	0.0	20.0	0.0	40.0	0.0	0.0	20.0	0.0	0.0	92.0
	4.6 Storyboard interactive video	0.0	0.0	8.0	0.0	20.0	0.0	0.0	32.0	0.0	0.0	0.0	0.0	60.0
	Project management/administration	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
	Deliverable production	0.0	0.0	16.0	0.0	16.0	0.0	0.0	40.0	0.0	16.0	0.0	0.0	88.0
	TASK 4.0: Total Hours	12.0	0.0	74.0	0.0	96.0	6.0	40.0	150.0	48.0	12.0	0.0	0.0	438.0
	TASK 4.0: Labor Budget	\$3,300	\$0	\$13,320	\$0	\$12,480	\$600	\$4,000	\$15,000	\$960	\$4,320	\$0	\$0	\$53,980
TASK 5.0:	Develop Implementation Plan													
	5.1 Develop Implementation Plan	2.0	4.0	12.0	0.0	0.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	42.0
	Project management/administration	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
	Deliverable production	0.0	0.0	2.0	0.0	0.0	4.0	0.0	0.0	0.0	8.0	0.0	0.0	14.0
	TASK 5.0: Total Hours	2.0	4.0	16.0	0.0	0.0	28.0	0.0	0.0	0.0	8.0	0.0	0.0	60.0
	TASK 5.0: Labor Budget	\$550	\$920	\$2,880	\$0	\$0	\$2,800	\$0	\$0	\$160	\$720	\$0	\$0	\$8,030
	Total Labor Hours	33.0	15.0	150.0	25.0	125.0	188.0	56.0	150.0	131.0	88.0	0.0	0.0	961.0
	Total Labor Cost	\$9,075	\$3,450	\$27,000	\$3,500	\$16,250	\$18,800	\$5,600	\$15,000	\$10,480	\$7,920	\$0	\$0	\$117,075

Hourly Billing Rates *(effective January 29, 2017)*

BILLING CODE	LABOR CATEGORY	HOURLY RATE (\$)
260	Principal 6	\$350
250	Principal 5	\$325
240	Principal 4	\$300
230	Principal 3	\$275
220	Principal 2	\$250
210	Principal 1	\$230
200	Technical/Professional 20	\$230
190	Technical/Professional 19	\$220
180	Technical/Professional 18	\$210
170	Technical/Professional 17	\$200
160	Technical/Professional 16	\$190
150	Technical/Professional 15	\$180
140	Technical/Professional 14	\$170
130	Technical/Professional 13	\$160
120	Technical/Professional 12	\$150
110	Technical/Professional 11	\$140
100	Technical/Professional 10	\$130
090	Technical/Professional 09	\$120
080	Technical/Professional 08	\$110
070	Technical/Professional 07	\$100
060	Technical/Professional 06	\$90
050	Technical/Professional 05	\$80
040	Technical/Professional 04	\$70
030	Technical/Professional 03	\$60
020	Technical/Professional 02	\$50
010	Technical/Professional 01	\$40
350	Technical/Support 5	\$80
340	Technical/Support 4	\$70
330	Technical/Support 3	\$60
320	Technical/Support 2	\$50
310	Technical/Support 1	\$40
500	Court Testimony Starts at	\$300

Reimbursable and sub-consultant expenses are billed at cost plus 10%.

Appendix B—Resumes









Appendix B

Resumes

The following pages contain resumes for:

- Albert Ng, ENV SP | Project Manager
- Susan Sloan-Rossiter, ENV SP, NCICP | Principal-in-Charge
- Selma Mandzo-Predzic, PE, LEED AP | Parking & Transportation Demand Management
- Joe Herr, PE, PTOE, IMSA III | Intelligent Transportation Systems
- Dale Abbott, GISP | Applied Technology
- Terri Courtemarche | Graphic Design

TEAM MEMBER/ROLE	QUALIFICATIONS SUMMARY
 <p>Albert Ng, ENV SP Project Manager <i>17 Years Experience</i> MS, Transportation, Massachusetts Institute of Technology, 2011</p>	<ul style="list-style-type: none"> • Specializes in the evaluation of transportation systems and parking infrastructure, as well as the assessment of simple and complex traffic roadway networks, large and complicated multi-phased projects, and general traffic engineering oversight • Served as Project Manager for the Commonwealth's recent effort to attract Amazon to build its second headquarters in Massachusetts. Led the proposal development effort and served as a strategic advisor for transportation and development sites
 <p>Susan Sloan-Rossiter, ENV SP, NCICP Principal-in-Charge <i>40 Years Experience</i> MCP, Transportation, University of Pennsylvania, 1978</p>	<ul style="list-style-type: none"> • Extensive transportation planning, permitting, and management experience with a focus on the planning and analysis of large complex multimodal projects and neighborhood studies • Served as VHB's Project Manager for the Alexandria Center at Kendall Square Project, MIT's redevelopment in Kendall Square, Tech Square, One Kendall Square, and Alexandria's other area developments. • Well versed in the Kendall Square area's mobility and multimodal opportunities and challenges.
 <p>Selma Mandzo-Predzic, PE, LEED AP Parking & Transportation Demand Management <i>12 Years Experience</i> BS, Civil Engineering, Northeastern University, 2006</p>	<ul style="list-style-type: none"> • Specializes in traffic planning studies and areawide transportation master plans with a focus on roadway design, signage and pavement marking plans, traffic operations and safety analyses, as well as cost estimating • Extensive experience providing transportation planning services throughout the City of Cambridge for projects including Kendall Square Urban Renewal Plan, Alexandria Center at Kendall Square, University Park Transportation Study
 <p>Joe Herr, PE, PTOE, IMSA III Intelligent Transportation Systems <i>43 Years Experience</i> BS, Electrical Engineering, Northeastern University, 1977</p>	<ul style="list-style-type: none"> • Has served as the technical lead in the design and deployment of more than 3,000 traffic signal control assemblies of various types and manufacturers • Lead engineer in evaluating and field troubleshooting of a 50-location-count station system at various locations on the Route 93/95 corridor. This system was designed to provide real time traffic flow data to the MassDOT Transportation Management Center in South Boston.
 <p>Dale Abbott, GISP Applied Technology <i>15 Years Experience</i> BS, Environmental Conservation: Environmental Affairs, University of New Hampshire, 2003</p>	<ul style="list-style-type: none"> • Extensive experience and skills in the application of GIS technology for transportation planning, municipal government, and regional planning, specializing in CAD/GIS data integration, data development, data modeling, analysis and cartographic presentation, and mobile data collection • Recent projects have included MassDOT, Intersection Safety Inventory; MassDOT, Highway Safety Improvement Program Support; FHWA, Assessment of the GIS Needs and Obstacles in Traffic Safety
 <p>Terri Courtemarche Graphic Design <i>25 Years Experience</i> BA, Graphic Design, University of North Florida, 1992</p>	<ul style="list-style-type: none"> • Specializes in project branding, public outreach efforts, print and web applications, historical and interpretive panels/signage, report design, and web/mobile application design • Managed the design, layout, and printing of Massport's 2015 Sustainability Management Plan Highlights Report. Collaborated with her team and with Massport to develop possible design layout options, expressing large amounts of data in a visual way using infographics and charts, and creating a report that is easily navigable

Albert Ng, PTP, ENV SP

Project Manager, Transportation Technology Leader, Transportation Planning



As VHB's Transportation Technology Leader, Albert specializes in the evaluation of transportation systems and parking infrastructure, as well as the assessment of simple and complex traffic roadway networks, large and complicated multi-phased projects, and general traffic engineering oversight and coordination on various public- and private-sector projects.

17 years of professional experience

Education

MS, Transportation,
Massachusetts Institute of
Technology, 2011

BS, Civil Engineering,
Northeastern University, 2005

BA, Psychology/Sociology,
Wesleyan University, 1998

Registrations/Certifications

Engineer in Training

Professional Transportation
Planner, 2013

Envision™ Sustainability
Professional, 2013

Amazon HQ2, Commonwealth of Massachusetts Submission, MA

Albert served as the Project Manager for the Commonwealth's effort to attract Amazon to build its second headquarters in Massachusetts. Under Albert's leadership, VHB led the proposal development effort and served as a strategic advisor for transportation and development sites. The effort had an extremely tight four-week deadline and required coordination between senior level officials and staff from the Governor's office, Office of Housing and Economic Development, MassDOT, and other state agencies.

South Boston Waterfront Sustainable Transportation Plan, Boston, MA

Albert served as a technical lead on the South Boston Waterfront Sustainable Transportation Plan, an interagency (City of Boston, MassDOT, Massport, MCCA) project to help determine the current and future transportation needs of one of the fastest growing areas in the country. Albert's efforts focused on multimodal transportation needs and alternatives, in particular on pedestrian, bicycle, and transit access to the South Boston Waterfront.

NorthPoint, Shared Parking Analysis, Cambridge, Somerville, and Boston, MA

Albert led the effort to determine shared use parking demand for a 5.2-million-square-foot mixed-use development located at the intersection of three municipalities: Cambridge, Somerville, and Boston. Using standardized Urban Land Institute and Institute of Traffic Engineers' methodology, he developed a spreadsheet tool to analyze the site's peak hour parking demand, which includes residential, office, retail, hotel, and grocery store uses. This analysis demonstrated the synergy between the different uses parking demand peaks, reducing the site's overall parking need.

Longwood Medical and Academic Area Bicycle Accommodation Feasibility Study, Boston, MA

Albert evaluated existing conditions and the feasibility of proposed bicycle accommodations within the Longwood Medical Area of Boston, a constrained, multi-use study area. He surveyed both bicycle commuters and non-bicycle commuters, and developed and designed surveys to determine the behavior of these constituents and motivations with regards to commuting mode. Viable alternatives were developed and presented based on compilation of quantitative and qualitative data and analysis.

Albert Ng, PTP, ENV SP

Boston 2024, Boston, MA

Albert served as Transportation Technical Team Lead on the effort to bring the Olympic games to the City of Boston in 2024. The transportation component of the bid focused on the feasibility for the regional and local transportation to support the significant and various transit and roadway demands of half a million daily spectators and over 100,000 athletes, coaches, media, staff, and volunteers. The analysis reviewed regional arrival patterns, distribution of trips throughout the transportation network, and loading of the MBTA rapid transit lines to understand the existing and potential capacity of the system. Albert's efforts focused on the development of an Olympic Roadway Network to provide reliable passage for athletes and analysis of the transit system by understanding current, future, and Olympic demands and how to sufficiently provide transit capacity through strategic, high value infrastructure investment. Evaluation included transit and pedestrian analyses of the South Boston Waterfront, potential site of several Olympic events. Boston was selected as the US Olympic Committee supported Host City and scored highest marks for its transportation analysis.

NPS, Northeast Region Long Range Transportation Plan

For the National Park Service (NPS), Albert assisted in the development of the Northeast Region (NER) Long-range Transportation Plan (LRTP), which is the first regional planning initiated within the NPS system. In addition to developing a planning document that will ultimately guide future transportation program development and investment in the region, this project is expected to serve as a replicable transportation planning process model for region-level transportation planning throughout the National Park Service. An objective of the LRTP is to determine how to prioritize funding needs within and across different asset categories. As such, Albert is helping to develop a process that helps the NER determine where to allocate resources.

Worcester Regional Mobility Study, Worcester MA

Working with the Central Massachusetts Regional Planning Commission on an 18-month, \$300,000 study, Albert served as a Task Manager on a comprehensive assessment of the multimodal movement of people and goods throughout the urban core of Central Massachusetts, comprised of 132 square miles and 12 municipalities. The study established short-, medium-, and long-term 2030 transportation recommendations. Albert was responsible for the design of the data collection program and the analysis for over 40 intersections.

Susan Sloan-Rossiter, ENV SP, NCICP

Principal-in-Charge



A VHB Principal and Senior Project Manager, Susan has extensive transportation planning, permitting, and management experience with a focus on the planning and analysis of large complex multimodal mixed-use development projects and neighborhood studies. She leads the firm's Transportation Demand Management (TDM) practice and has managed numerous parking and transit studies for high-profile public- and private-sector clients.

Education

MCP, Transportation, University of Pennsylvania, 1978

BA, Sociology, University of Michigan, December 1975

Registrations/Certifications

National Charrette Institute
Charrette System™ Certificate,
2007

Envision™ Sustainability
Professional, 2013

Envision™ Verifier, 2015

Affiliations/Memberships

Association for Commuter
Transportation, 1996 - present

Urban Land Institute (ULI)

40 years of professional experience

Alexandria Center at Kendall Square, Cambridge, MA

Susan was VHB's Project Manager for the transportation analysis conducted for the rezoning and permitting of a 1.8 M sf R&D, retail, and residential development on six parcels along Binney Street. Key aspects included the development of a transportation analysis for rezoning; a "complete street" cross-section concept for Binney Street to accommodate pedestrians, bicycle, transit and vehicular mobility needs, a multimodal center, shuttle bus plan, and a shared parking plan, as well as a comprehensive plan for the use of alternatives to drive alone commuting. Susan developed the Alexandria Center at Kendall Square PTDM plan and Neighborhood Traffic Monitoring report. Under Susan's supervision, VHB has undertaken the annual PTDM monitoring and reporting for Alexandria.

MIT Kendall Square Development, Cambridge, MA

Susan was the Project Manager for transportation planning and engineering services for the Massachusetts Institute of Technology Investment Management Company (MITIMCo) and MIT's Kendall Square development project; the development of six building sites and open space totaling 1.76M gsf of office, R&D, housing and retail. Susan has provided transportation planning and engineering support for the mixed-use transit oriented development. She oversaw the Transportation Impact Study (TIS) and developed the PTDM plan required for the project's special permit approval.

University Park, Cambridge, MA

As University Park was permitted prior to the passing of Cambridge's PTDM ordinance, the development has both traffic mitigation and surveying requirements under a special permit as well as through the PTDM ordinance for Phases III and IV. Susan was the Project Manager for undertaking the surveying requirements in compliance with their special permit as well as PTDM monitoring and reporting since 2000. The PTDM survey requires separate surveying of tenants parking in the Phase III and Phase IV garages, surveying several different companies of varying sizes and industry annually presenting the met challenge in consistently reaching the required response rate.

Memorial Drive Pedestrian Crossing Safety Study, Cambridge, MA

Susan is the Project Manager leading transportation planning and engineering services for this pedestrian and bicycle crossing safety study for MIT. The purpose of the study is to identify transportation improvements that will improve and enhance pedestrian and vehicle safety along the stretch of Memorial Drive that abuts the MIT campus. The focus of the study

Susan Sloan-Rossiter, ENV SP, NCICP

will be to identify the physical and operational deficiencies at the critical crossing locations and develop near and long-term comprehensive improvements. These improvements will interface with a planned two-way separated bicycle lane facility on an adjacent roadway conceptually designed by VHB for MITIMCo.

MIT Vassar Street Residents Hall, Cambridge, MA

Susan was the Project Manager for the transportation analysis conducted for the recently City of Cambridge approved MIT Undergraduate Residence Hall on Vassar Street. Susan worked with the project team to ensure that the Vassar Street bicycle cycle track and pedestrian sidewalk areas, future curb use needs, loading access and enhanced bicycle and pedestrian roadway crossings, were integrated into the overall access and egress locations of the building design.

Metropolitan Warehouse Redevelopment Project, Cambridge, MA

Susan was the Project Manager for the transportation analysis conducted for the proposed redevelopment of the Metropolitan Warehouse for institutional uses including an undergraduate residence program with other complementary uses including “maker space”, study space and dining hall for the MIT campus. The focus of the transportation study was on pedestrian and bicycle access due to the limited amount of parking to be provided. Loading access was also a key study component.

NorthPoint Development, East Cambridge, MA

Susan worked with HYM Investments and DivcoWest on the redevelopment of North Point. Her role has focused on the redesign of O’Brien Highway and improved pedestrian access to the new Lechmere Station. She is working with the development team to assess the transportation impacts of potential improvements to the previously envisioned master plan. As part of this work, Susan conducted a shared parking analysis and developed an area wide parking district concept to enable an overall reduction in the required parking supply. As Project Manager, she conducted the transportation analysis for the planning and permitting of the original Spaulding and Slye transit-oriented development of 5.5 million square feet of mixed land use at NorthPoint.

State Street Corporation Rideshare Report, Boston, MA

Susan developed the baseline DEP Rideshare report for State Street Corporation in 1996 and has overseen their annual submittal for the past nineteen years for their Boston and Quincy facilities. Susan worked closely with State Street’s IT department to ensure firewalls and security protocols were maintained. Over the years, State Street has closed office locations, relocated to new offices, acquired companies, and varied their overall population size with upswings and downswings of the economy. All of these changes presented challenges for DEP’s trip reduction calculation methodology. As employment levels and locations changed, VHB was required to modify the approach to surveying and reporting results to remain consistent with DEP’s regulatory accounting practices. VHB also provided an on-site Transportation Coordinator to plan and implement State Street’s TDM programs.

Selma Mandzo-Predzic, PE, LEED AP

Parking and Transportation Demand Management (PTDM)



Selma is a project manager based in VHB's Boston office who specializes in traffic planning studies and areawide transportation master plans. She has strong Transportation Demand Management (TDM) skills and is experienced in roadway design, signage and pavement marking plans, traffic operations and safety analyses as well as cost estimating. She is skilled in AutoCAD, AutoTURN and Synchro traffic capacity analysis software.

Education

BS, Civil Engineering,
Northeastern University, 2006

Registrations/Certifications

Professional Engineer
(Transportation) MA, 2012
LEED Accredited Professional,
2009

OSHA 10-Hour Construction
Safety and Health Certificate

Affiliations/Memberships

WTS International, Boston,
Diversity Co-Chair, 2008, 2014,

WTS International, Boston,
Membership Co-Chair,
2015, 2016

WTS International, Boston,
Special Projects Co-Chair,
2017, 2018

12 years of professional experience

Alexandria Center at Kendall Square, Cambridge, MA

Selma provided transportation planning and engineering services during the rezoning of the project area as well as throughout the city and state permitting processes for a 1.8 million square foot mixed-use development. She contributed to the development of the conceptual redesign of Binney Street and intersection improvements throughout the Kendall Square area. Selma is currently involved in the development and implementation of transportation demand management programs in the recently constructed Alexandria Binney Street buildings, as well as monitoring and reporting related to the City of Cambridge PTDM Ordinance. For 225 Binney Street, Selma also manages the annual Neighborhood Traffic Monitoring program.

University Park Transportation Study, Cambridge, MA

Selma manages the design and administration of a survey instrument to assess travel mode shares, parking utilization and transportation demand management program utilization of 15 employers and over 2,000 employees, for the Cambridge research park. The results are compiled into a report for compliance with City of Cambridge PTDM (Parking and Transportation Demand Management) ordinance. She has been involved in University Park's PTDM Surveys and submissions since 2008. In the Spring of 2013, the research park, with her assistance, conducted a more intensive traffic monitoring program that included office, R&D, retail and hotel employees as well as residents and visitors. The traffic monitoring program satisfied a vehicle trip threshold that was established in 1988, as part of the University Park's original permitting process.

Kendall Square Urban Renewal Plan, Cambridge, MA

Selma provides transportation planning and engineering services for the Kendall Square Urban Renewal Plan (KSURP) Project. Selma developed a detailed Red Line capacity analyses that was submitted as part of the Transportation Impact Study to the City of Cambridge, on behalf of Boston Properties.

MIT Kendall Square Development, Cambridge, MA

Selma has provided transportation planning and engineering services for the redevelopment of several MIT parcels in Kendall Square for the City of Cambridge Rezoning Process as well as for the PUD Special Permit, which included the preparation of a Transportation Impact Study. The study included traffic capacity and operations analyses as well as a detailed Red Line capacity analyses. Selma's other focus was on the development of complete street design

Selma Mandzo-Prelidzic, PE, LEED AP

concepts to support the redevelopment of this area with special attention to pedestrian and bicyclist accommodations. She prepared several illustrative concepts for Wadsworth Street, Amherst Street and Ames Street, ranging from shared lane accommodations to two-way cycle tracks.

Flatley's Schrafft's Center, Charlestown/Boston, MA

Selma designed and managed the administration of a survey instrument to assess travel mode shares, parking utilization and transportation demand management program utilization of tenants and employees of the Schrafft's Center, located in Charlestown. The results were used to develop a transportation demand management (TDM) Plan for the site with programs that range in terms of implementation timeframe and cost. Selma continues to support Flatley with the implementation of the plan.

Wentworth Institute of Technology, Boston, MA

For the past 2 years Selma has been managing the University's compliance with the Massachusetts Department of Environmental Protection (MassDEP) Rideshare Regulation by designing/administering secure online surveys to over 3,000 employees and students on Boston campus, as well as analyzing mode share information and compiling MassDEP Long Form and Short Form Update Reports.

MITIMCo, Brookline Avenue/Tudor Street PTDM Plan, Cambridge, MA

Selma developed transportation demand management programs for 130 Brookline and 17 Tudor Street buildings in Cambridge, as part of its parking and transportation demand management (PTDM) plan. She prepared cost analyses and TDM plan comparisons for the client, and attended program negotiations with the City's PTDM Officer. She also provided guidance and recommendations to the architect on bicycle storage location and systems.

State Street Corporation Rideshare Program, Boston & Quincy, MA

Over the course of seven years Selma has been helping State Street comply with the Massachusetts Department of Environmental Protection (MassDEP) Rideshare Regulation by designing/administering secure online surveys to over 11,000 employees in nine different office locations throughout Boston and Quincy, as well as analyzing mode share information and compiling MassDEP Long Form and Short Form Update Reports, including Summary of Commute Data Forms. More recently she has transitioned State Street's Quincy office to a new employee applicability definition and Base Year re-submission to allow for easier survey administration in future years.

Joseph Herr, PE, PTOE, IMSA III

Intelligent Transportation Systems



Joe is VHB’s Technical Lead on advanced transportation management systems (ATMS). He started his career as a traffic engineer with the City of Boston Transportation Department, and spent 10 years with two traffic signal suppliers where he deployed more than 3,000 traffic control assemblies and hundreds of ATMS in seven states. Joe is past president of the New England Section of the Institute of Transportation Engineers, and he serves on several national transportation-related committees.

Education

BS, Electrical Engineering,
Northeastern University, 1977

Registrations/Certifications

Professional Engineer (Traffic)
MA, 2005

Professional Traffic Operations
Engineer

International Municipal Signal
Association Certified – Work
Zone

International Municipal Signal
Association Certified – Traffic
Signal Level 3 (field)

International Municipal Signal
Association Certified – Traffic
Signal Level 3 (bench)

International Municipal Signal
Association Certified Traffic
Signal Inspector

International Municipal Signal
Association Certified Level 1 –
Roadway Lighting

International Municipal Signal
Association Certified Level 1 –
Fiber Optics

OSHA 10-Hour Construction
Safety and Health Certificate

Affiliations/Memberships

Institute of Transportation
Engineers, National, Fellow,
1986

Institute of Electrical and
Electronics Engineers, National,
1977

International Municipal Signal
Association, National, 1977

43 years of professional experience

Beacon Street Improvements, Brookline, MA

Joe developed the technical specifications, design, and inspection of a 22-intersection system along a busy commuter urban thoroughfare. This project included the installation of a multiple master, closed loop system involving in-vehicle and hardwire emergency vehicle preemption system and provisions for the movements of Massachusetts Bay Transportation Authority (MBTA) Green Line trolleys at grade crossings through the corridor.

Downtown Streetscape Phase 1, Needham, MA

Joe provided planning, design and inspectional services for the two-intersection traffic signal system project. The system itself was configured as a peer to peer architecture to provide dynamic coordination between the two closely spaced intersections. One of the key project issues involved the existing MBTA rail grade crossing/commuter rail stations located approximately 200’ from one of the project intersections. One of the critical project issues was the impact of rail operations on the traffic conditions in the downtown area. To minimize the impacts, a conditional timing strategy was designed into the signal system which provided additional timing to the Great Plain Avenue approach when traffic congestion levels were reached due to the arrival of the train at the crossing. FHWA/NPs – Permanent Count Stations Rehabilitation National Joe is currently involved in a project for FHWA/NPS related to the rehabilitation of existing permanent traffic count stations at various National Parks located in various geographical areas of the country. The work includes field visits to each site and project design work detailing technical requirements necessary to provide updated count stations that are compliant with current agency standards.

MassDOT, Regional Traffic Operations Center, Traffic Count System, Eastern Massachusetts

Joe was the lead engineer in evaluating and field troubleshooting of a 50-location-count station system at various locations on the Route 93/95 corridor. This system was designed to provide real time traffic flow data to the Massachusetts Department of Transportation (MassDOT) Transportation Management Center in South Boston. This project required location-by-location identification of existing problems and determination of what was required to bring each site back into stable operation, this included electrical testing of detection, 170 controller programming and communications. Tasks also included per site testing of cabinet terminal facilities, detector racks and grounding. Joe provided as-needed field support to the electrical contractor in mitigating the problems identified during the testing so that the system would operate properly.

Joseph Herr, PE, PTOE, IMSA III**MassDOT, Transit Priority System, Route 9, Northampton to Amherst, MA**

Joe provided engineering support on one of the first deployments of a transit signal priority systems for the Massachusetts Department of Transportation (MassDOT). This work, which involved 24 signalized intersections along the Route 9 corridor in western Massachusetts, included development of TSP parameters for both the field controllers and IR detector phase selectors. Data was field implemented and adjustments made to various system elements based on traffic operation.

MassDOT, Route 79/I-195 Interchange Improvements and Repairs and Painting of the Braga Bridge Design-Build (DB), Fall River, MA

Joe was the technical lead for the signal system design elements for this high-profile project that improved aging infrastructure, opened the waterfront, and enhanced economic development opportunities for the city. This \$200M design-build project consisted of removing the two-level Route 79 viaduct and rebuilding Route 79 at-grade using parts of existing streets. Along with the major interchange design, the project featured extensive public outreach and involvement, traffic operations and safety, including a Roadway Safety Audit, accelerated bridge design, and temporary traffic control/construction sequencing alternatives. With the need to minimize project related traffic congestion, a customized, application specific system was designed to dynamically monitor and adjust traffic signal timings in real time to facilitate traffic flow through the construction area.

City of Boston Transportation Department Experience

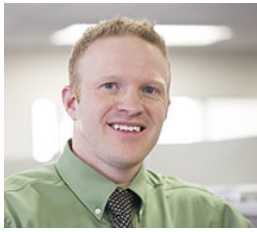
Prior to joining VHB, Joe was with the City of Boston Transportation Department for seven years as Senior Traffic Engineer where he was responsible for the design and oversight of numerous transportation projects. Representative efforts included preliminary design of Boston's UTCS traffic control system, the design of an 18-signal Massachusetts Avenue computerized traffic control system that supported traffic responsive and transit vehicle priority operations, and design of a digital master system comprising 20 signals within the Financial District. He also managed the operation of the city's traffic signal control system at City Hall, which supervised more than 100 traffic signal locations in downtown Boston. Joe wrote technical specifications, reviewed consultants' plans, developed signal timing plans, participated in transportation studies, provided court testimony involving traffic signal operations and field inspected contractors' work and provided as-needed technical support for the city's traffic signal maintenance division.

Advanced Traffic Management Systems, Eastern United States

Joe has provided planning, implementation, and design efforts for more than 200 advanced traffic signal control systems from Maine to Florida. He has served as the technical lead in the design and deployment of more than 3,000 traffic signal control assemblies of various types and manufacturer.

Dale Abbott, GISP

Applied Technology



Education

BS, Environmental
Conservation: Environmental
Affairs, University of New
Hampshire, 2003

Registrations/Certifications

Certified Geographic
Information System
Professional, 2015

Dale is the Applied Technology Manager for the New England Region at VHB and leads a team of GIS specialists and application developers. He has extensive experience and skills in the application of GIS technology for municipal government, regional planning, natural resources protection, and transportation planning. His areas of specialization include CAD/GIS data integration, data development, data modeling, analysis and cartographic presentation. Dale is also proficient in mobile data collection efforts utilizing Global Positioning Systems (GPS) technology to create custom data collection forms using a variety of software packages.

15 years of professional experience

MassDOT, Intersection Safety Inventory, Massachusetts

Dale is assisting the Massachusetts Department of Transportation (MassDOT) in the development of statewide intersection inventory. MassDOT does not have an intersection inventory populated with fundamental junction attributes, and an intersection inventory is critical to allow for screening of safety performance of these facilities. The goal of the project is to create an intersection inventory that will provide MassDOT with the ability to develop intersection safety performance functions (SPFs). The intersection inventory includes the MIRE fundamental data elements, as well as many other junction and approach elements in support of generating the intersection safety performance functions.

MassDOT, Highway Safety Improvement Program (HSIP) Support, Massachusetts

Dale was the GIS Task Manager for the various HSIP related tasks as part of the Massachusetts Department of Transportation's (MassDOT) On-Call Traffic Design Consultant contract, which included on-call/as needed highway safety engineering services on a variety of tasks. Tasks included developing a program for the creation of an intersection inventory for MassDOT, which will provide MassDOT with the ability to develop intersection safety performance functions (SPFs). Other tasks included the development of planning level SPFs for Urban and Rural Arterial facilities and other miscellaneous HSIP related tasks.

FHWA, Assessment of the GIS Needs and Obstacles in Traffic Safety

Dale served as a Technical Expert for this FHWA Office of Safety Research and Development project to assess GIS practices, needs and obstacles, and opportunities in traffic safety programs. The project included a literature review and summary of relevant peer exchanges along with a Marketing, Communications, and Outreach Plan. These resources were summarized in a Final Report to help guide future FHWA efforts to best support the needs of state and local agencies as they develop and improve their GIS programs for safety.

FHWA, Local Data Integration Pilot Project, Rhode Island

Under a contract with the Federal Highway Administration (FHWA), Dale is assisting the Rhode Island Department of Transportation (RIDOT) on a local data integration project aimed at creating a statewide road inventory using the Model Inventory Roadway Elements (MIRE) data model. The inventory includes over 175 of the 202 elements listed in MIRE and all data will be stored within Esri Roads & Highways. Dale is providing technical assistance on

Dale Abbott, GISP

the field data collection of the elements, data governance, storage and management of the data with Esri Roads & Highways, and a road inventory maintenance plan. The project also includes a review of the existing RIDOT roadway data business systems including the state's crash data management system, aimed at creating strategies through data governance to link the business systems.

FHWA, Model Inventory of Roadway Elements Management Information Systems (MIRE MIS), New Hampshire

Under a contract with the Federal Highway Administration (FHWA), Dale worked on a project that included a pilot data collection effort to develop an inventory of over 10,000 intersections in New Hampshire for the New Hampshire Department of Transportation. Dale was the GIS technical lead for this project, and he led the development of a statewide intersection inventory, as well data development of set of standardized data collection forms for collecting intersection and intersection leg characteristics. In addition to the inventory, Dale led the development of an automated set of tools to maintain the intersection inventory. The results of this effort to assist practitioners in improving their roadway data for safety and other uses.

NHDOT, I-293 Transportation Exits 6 and 7 Transportation Planning Study, Manchester, NH

For the New Hampshire Department of Transportation (NHDOT), Dale was Environmental/GIS Task Manager for data collection process and GPS data collection of environmental resources for a planning study to consider transportation system modifications aimed at addressing capacity and safety-related deficiencies along mainline and at interchanges (Exits 6 and 7) for three-mile segment of I-293, including consideration of relocating and reconfiguring Exit 7 into fully directional interchange. VHB integrated state, regional, and local GIS data in the transportation planning process. Dale built a GIS database of traffic data, natural resource locations, cultural resources, and socio-economic data sets, as well as completed GIS alternatives screening analysis, which involved identifying impacts to natural and cultural resources and to socio-economic impacts.

Terri Courtemarche

Graphic Design



Terri is a Graphic Design Manager who manages and collaborates with a team of designers to develop effective visual identities, materials, and systems for client projects. Some specific areas of design include developing project brands, designing for public outreach efforts, using print and web applications, historical and interpretive panels/signage, report design, and web/mobile application design.

25 years of professional experience

Education

BA, Graphic Design, University of North Florida, 1992

Affiliations/Memberships

The American Institute of Graphic Arts, Boston, MA
Design Management Institute

Logan International Airport, Sustainability Highlights Report, Boston, MA

Terri managed the process for the design, layout, and printing of Massport's 2015 Sustainability Management Plan Highlights Report. She collaborated with Massport to develop possible design layout options, expressing large amounts of data in a visual way using infographics and charts, and creating a report that was easily navigable for the reader. The report also led to the design of a yearly sustainability calendar for Massport's employees and tenants as a tool to inform them of Massport's commitment to sustainability and future goals.

Vermont Agency of Transportation, Highway and Safety Manual, Burlington, VT

For the Vermont Agency of Transportation (VTrans), Terri designed several reports including a Highway and Safety Manual that focused on distracted driving. She created a flexible grid system within the layout to allow for large amounts of content and data. The overall aesthetics and design were well-received and integrated into the design of three-banner stands to be used for public outreach purposes.

Barnum Station Environmental and Conceptual Design, Bridgeport, CT

The goal of this project was to construct a second rail station on a 17-acre parcel in Bridgeport as a catalyst for revitalizing the East Side and East End neighborhoods. Terri served as the VHB Graphic Design Team Manager and helped develop a logo and website as the first steps in solidifying a visual brand for this project. The brand makes the project easily identifiable to the public and local organizations and is consistently used in various social media outlets, websites, and print to keep the audience informed throughout the various stages of the project. Additional components included presentation boards, PowerPoint, and handouts for meeting attendees.

<http://www.barnumstation.com/landing.shtml>

Move New Haven Transit Mobility Study, Logo, Palette, Font, and Template Brand Design, New Haven, CT

The work on this brand was unique because it had to follow brand guidelines already in place by the City of New Haven. Terri worked with her colleagues, the client, and the marketing firm to develop the logo and have it approved by multiple stakeholders. In addition to the logo, a color palette, font, and templates were created as part of the brand to use throughout the project and at public events. She also provided feedback to the subconsultant responsible for the website to make sure the brand guidelines were being followed.

<http://www.movenewhaven.com>

Terri Courtemarche

Nashville International Airport, Sustainability Report, Nashville, TN

Terri designed a sustainability report for Nashville International Airport that describes the steps the airport has taken and continue to take to become a more sustainable airport. The report included showing data in a visual way, extracting important points from a large amount of text and displaying them prominently, and integrating imagery within the layout. She worked alongside the client during the design and guided them through the review process until the report was completed and printed.

NPS, Long-Range Transportation Plan

For the National Park Service (NPS), Eastern Federal Lands Highway Division (EFLHD), Terri used the NPS template guidelines to produce a full-size report and an executive summary that outlined the NPS plan to maintain or develop transportation needs within National Parks in the Eastern Region. Infographics and charts were used to better show the data, as well as icons were used for navigation through the document. This planning document will ultimately guide future transportation program development and investment, and serve as a transportation planning process model for region-level transportation planning throughout the National Park Service.

Appendix C—References



Appendix C

References

The following page contains VHB's references.

References

We encourage you to contact our clients to learn more about the quality of our work.

REFERENCES		
PROJECT	REFERENCE/ADDRESS	CONTACT INFORMATION
<p>Massport Transportation Planning On-Call <i>Boston, MA Ongoing</i></p> <p>Services Provided: transportation permitting, planning and engineering consulting</p> <p>Key Personnel: Albert Ng, Susan Sloan-Rossiter, Joe Herr, Selma Mandzo-Predzic</p>	<p>Hayes Morrison Deputy Director, Maritime, Land Use, and Transportation Planning Massachusetts Port Authority Strategic and Business Planning One Harborside Drive, Suite 206-ND East Boston, MA 02128</p>	<p>617.568.3689 hmorrison@massport.com</p>
<p>Amazon HQ2 <i>Boston, MA Completed 2017</i></p> <p>Services Provided: transportation planning, land development, strategic site advice, developed bid submittal</p> <p>Key Personnel: Albert Ng (Project Manager), Terri Courtemarche</p>	<p>Richard Henderson Executive Vice President, Real Estate MassDevelopment 99 High Street Boston, MA 02110</p>	<p>617.330.2096 Rhenderson@Massdevelopment.com</p>
<p>Strategic Highway Safety Plan <i>Rhode Island Completed 2017</i></p> <p>Services Provided: developed a project website using ArcGIS Online Story Map</p> <p>Key Personnel: Dale Abbott, Terri Courtemarche</p>	<p>Sean Raymond, PE Acting Managing Engineer Office of Safety Rhode Island Department of Transportation Two Capitol Hill Providence, RI, 02903</p>	<p>401.222.2694, Ext. 4204 Sean.Raymond@dot.ri.gov</p>
REFERENCES CITY OF CAMBRIDGE WITHIN THE PAST 5 YEARS		
PROJECT	REFERENCE/ADDRESS	CONTACT INFORMATION
<p>Mass Ave System Integration <i>Cambridge, MA</i></p> <p>Services Provided: Traffic Engineering</p> <p>Key Personnel: Joe Herr</p> <p>VHB Project Manager: Dave Greenberg</p>	<p>Patrick Baxter City of Cambridge Traffic Department 344 Broadway Cambridge, MA 02139</p>	<p>617.349.4715 pbaxter@cambridgema.gov</p>
<p>Kendall Square Urban Renewal Plan <i>Cambridge, MA</i></p> <p>Services Provided: Survey</p> <p>VHB Project Manager: Craig Robertson</p>	<p>Carlos Peralta Project Manager Cambridge Redevelopment Authority 255 Main Street, 4th Floor Cambridge, MA 02142</p>	<p>617.492.6800 cperalta@cambridgeredevelopment.org</p>
<p>City of Cambridge General Engineering On-Call <i>Cambridge, MA</i></p> <p>Services Provided: transportation planning; roadway engineering; traffic design and assessment; pedestrian and bicycle enhancements; water resources; field survey; and pavement evaluation and design services</p> <p>Key Personnel: Laura Castelli</p> <p>VHB Project Manager: Tim McIntosh</p>	<p>Joseph Barr, AICP Director of Traffic, Parking, and Transportation City of Cambridge Traffic Department 344 Broadway Cambridge, MA 02139</p>	<p>617.349.4743 jbarr@cambridgema.gov</p>

Appendix D—New Report Format Screen Caps



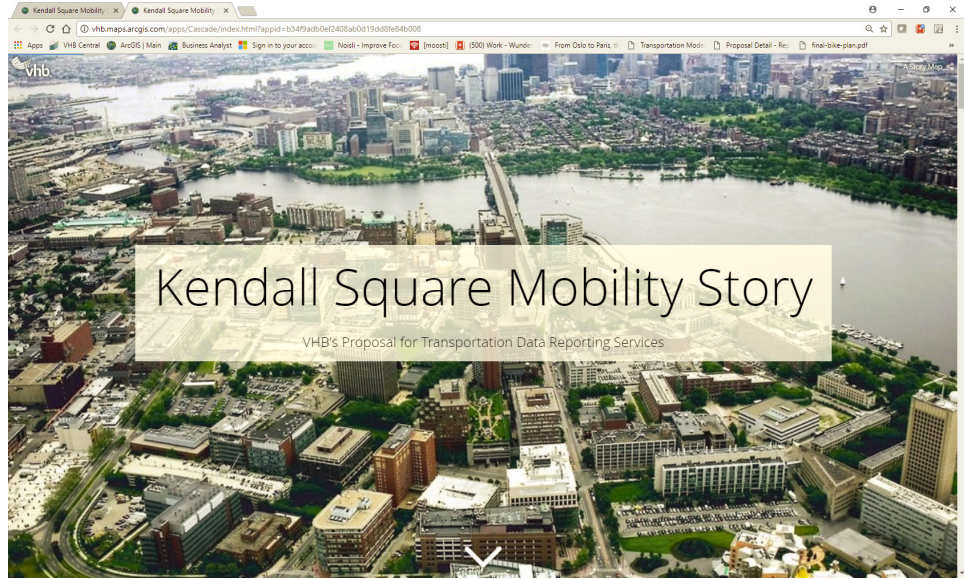


Annual Transportation Report—Kendall Square Urban Renewal Plan

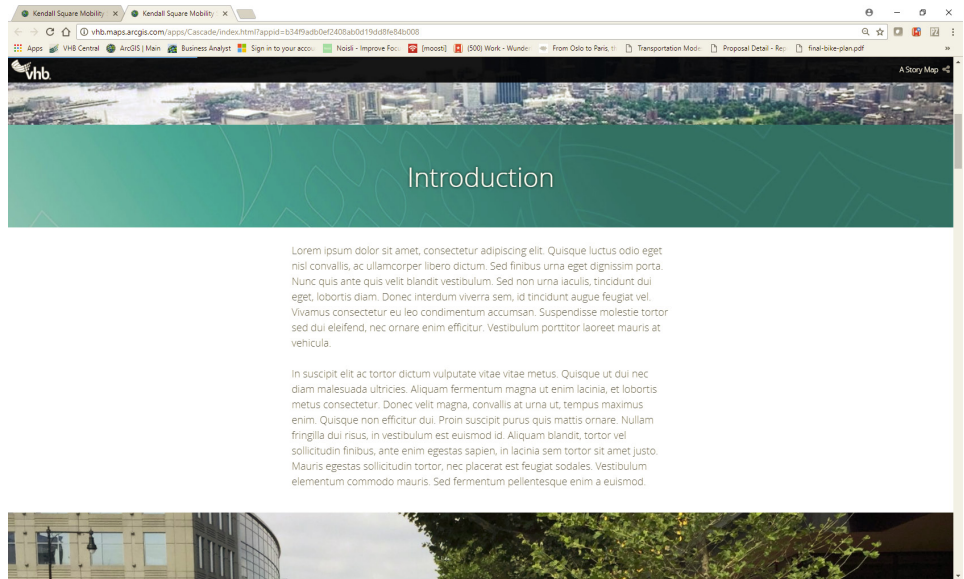
Appendix D

New Report Format Screen Caps

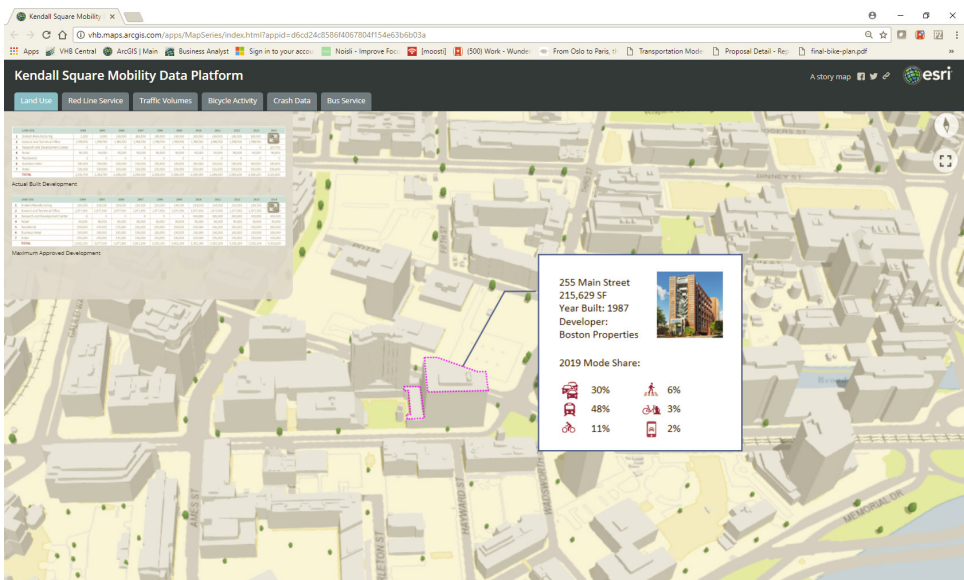
StoryMap Cover

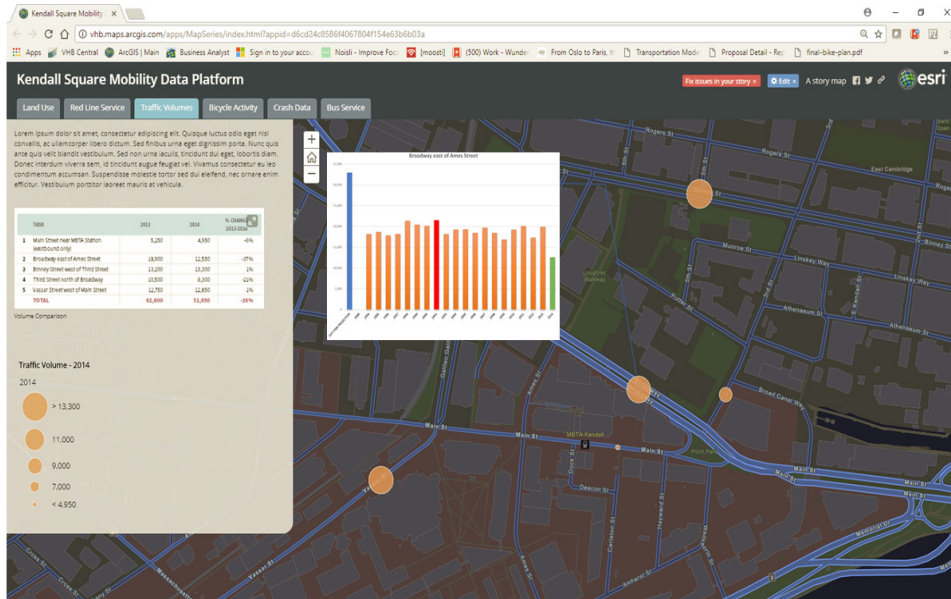


Narrative

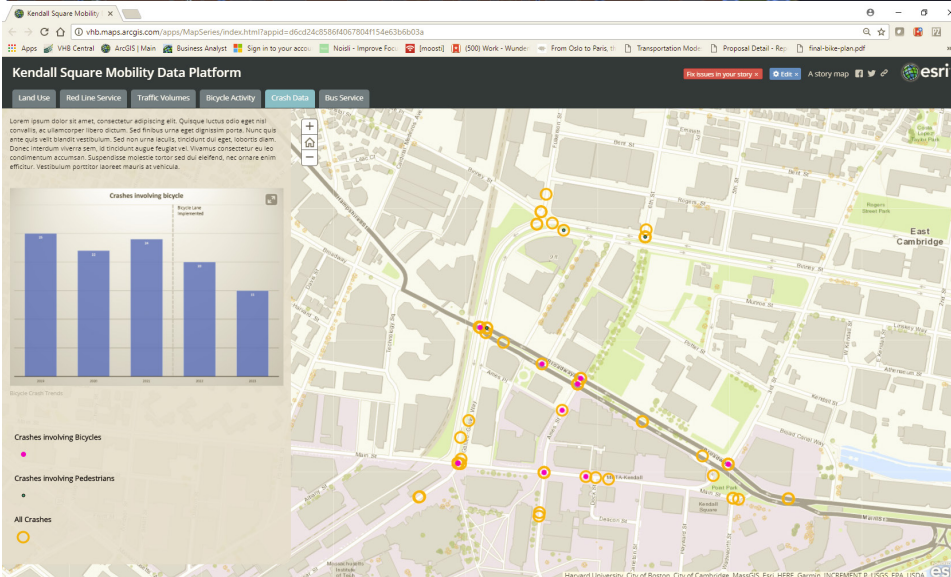


Land Use Information

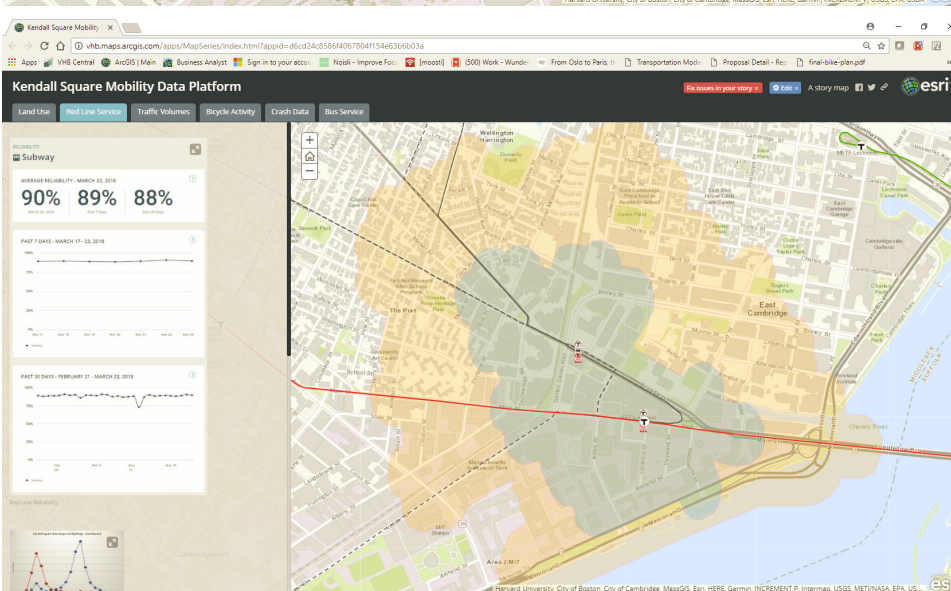




Vehicular Volume



Crash Data and Trends



Crash Data and Trends

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Appendix E—Report Samples



Appendix E

Report Samples

Report samples and links can be found on the following pages.

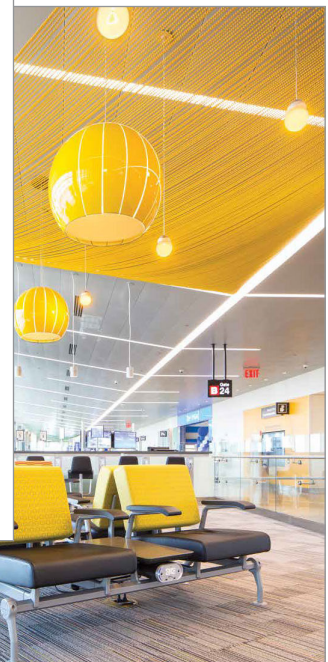
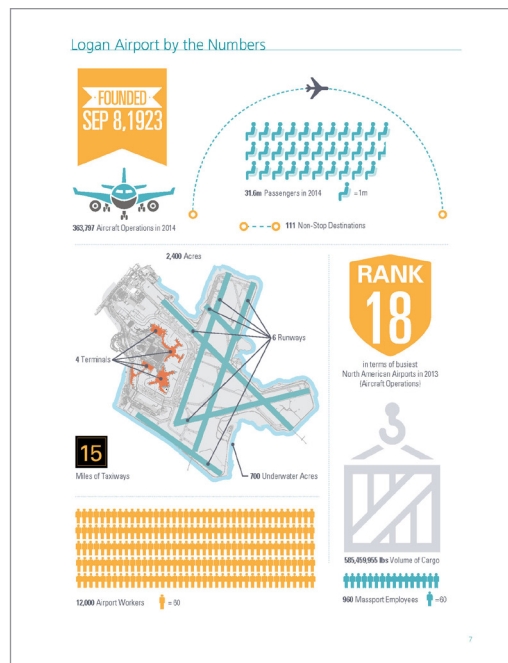
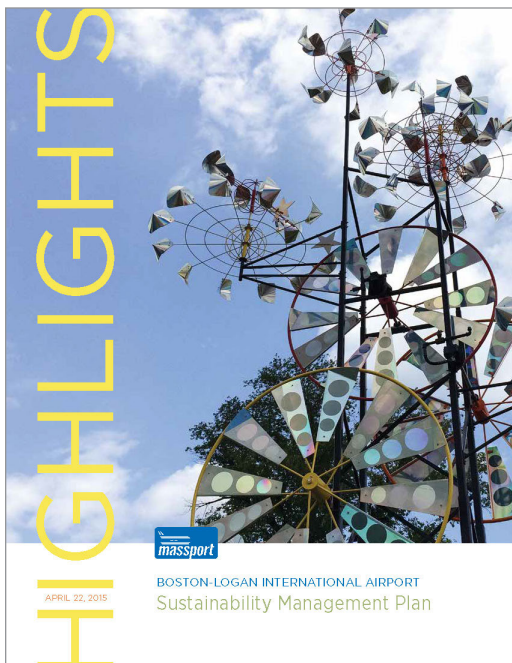
Logan Sustainability Highlights Report Massachusetts Port Authority (Massport)

Building strong relationships and understanding our clients are important to our team. VHB has worked with Massport for various design projects for two decades—becoming an extension of their staff. What began as designing the annual EIS and ESPR cover grew into a collaborative partnership. Additional design work has included sustainability reports, annual calendars, display boards, and supporting collateral for smaller events. The Sustainability Highlights

Report feature team-developed infographics to support Massport initiatives by turning complex data into easily accessible visual graphics, and handled the information in a way that was readily understood by the public.

https://www.massport.com/media/2397/logansmp_report.pdf

<https://www.massport.com/media/2363/logan-annual-sustainability-report-2016.pdf>



Additional Project Samples

In addition to the project highlights provided, we encourage the KSMF and CRA to visit the following links to view more of the graphic capabilities VHB can offer:

Nashville Sustainability Report

» https://www.flynashville.com/about/Documents/Nashville_IntlAirport_SustainabilityStudy_2012HR.pdf

San Francisco Sustainability Report

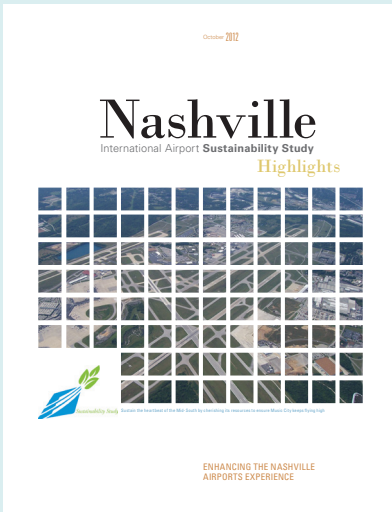
» <https://media.flysfo.com/media/sfo/community-environment/sfo-2014-sustainability-report.pdf>

» http://flysfo.proofic.net.s3.amazonaws.com/default/download/about/reports/pdf/SFO_2011_Environmental_Sustainability_Report.pdf

» <http://flysfo.proofic.net.s3.amazonaws.com/default/download/about/reports/pdf/ESReport-2007.pdf>

Amazon Headquarters 2: Massachusetts Proposal

» <https://www.mass.gov/hq2/>



3 Goals

Masport has set a number of sustainability goals to improve performance at Logan Airport, and established metrics for ongoing tracking of progress toward achieving those goals. The goals are separated into ten separate categories, which are: Energy and Greenhouse Gas Emissions, Water Conservation, Community, Employee, and Passenger Well-being, Materials, Waste Management, and Recycling, Resiliency, Noise Abatement, Air Quality Improvement, Ground Access and Connectivity, Natural Resources, and Water Quality/Stormwater. The goals, objectives, targets, and KPIs identified in the Logan Airport Sustainability Management Plan (SMP), shown below, will guide Masport as it advances its sustainability performance.

- Energy and Greenhouse Gas Emissions**
Goal: Reduce energy intensity and greenhouse gas emissions while increasing portion of Logan Airport's energy generated from renewable sources.
- Water Conservation**
Goal: Conserve regional water resources through reduced potable water consumption.
- Community, Employee, and Passenger Well-being**
Goal: Promote economically prosperous, equitable, and healthy communities and passenger and employee well-being.
- Materials, Waste Management, and Recycling**
Goal: Reduce waste generation, increase the recycling rate, and utilize environmentally sound materials.
- Resiliency**
Goal: Become an innovative and national model for resiliency planning and implementation among port activities.
- Noise Abatement**
Goal: Minimize noise impacts from Logan Airport's operations.
- Air Quality Improvement**
Goal: Decrease emissions of air quality criteria pollutants from Logan Airport sources.
- Ground Access and Connectivity**
Goal: Provide superior ground access to Logan Airport through alternative and HOV travel modes.
- Water Quality/Stormwater**
Goal: Protect water quality and minimize pollutant discharges.
- Natural Resources**
Goal: Protect and restore natural resources near Logan Airport.

Key Initiatives (cont.)

- Materials, Waste Management, and Recycling**
Goal: Reduce waste generation, increase the recycling rate, and utilize environmentally sound materials.
 - W1: Continue covering all of Logan Airport facilities to single-stream recycling (existing). - To be continued (dependent)
 - W2: Improve recycling tracking and data management.
 - W3: Continue to encourage artists and consumers to donate unused truck tires - expand beyond Southwest Airlines.
 - W4: Provide liquid collection vessel and additional water bottle filling stations.
 - W5: Provide more trash and recycling collection bins in parking garages and Masport-owned parks and open spaces.
 - W6: Incorporate comprehensive recycling and waste management training into employee orientation procedures.
 - W7: Require suppliers to make deliveries using fully returnable pallets and containers and to pick up empty pallets and containers for reuse.
 - W8: Develop and implement an Airport-wide organic management plan in conjunction with the statewide organics ban.
- Water Conservation**
Goal: Conserve regional water resources through reduced potable water consumption.
 - W1: Implement statewide water use data collection and reporting utilizing GIS to track water use, establish trends, and identify potential leaks.
 - W2: Conduct a comprehensive water audit to identify where and how water is used, establish the level of efficiency by water category, and identify improvement opportunities.
 - W3: Install inline filter prior to the feed point into the cooling system to decrease cooling tower blow-down.
 - W4: Evaluate the potential and cost/benefits of converting the central heating and cooling plant (CHC) into a hot water plant.

Logan SMP Short-term Sustainability Initiatives

- Cross-Cutting**
 - S1: Promote sustainable building practices among Logan Airport tenants by incorporating sustainability principles into the Request for Proposal (RFP) process.
 - S2: Incorporate sustainability principles into all lease/vendor contracts and lease agreements.
 - S3: Incorporate fuel efficiency and alternative fuel standards into all transportation-related services agreements.
- Energy and Greenhouse Gas Emissions**
Goal: Reduce energy intensity and greenhouse gas emissions while increasing portion of Logan Airport's energy generated from renewable sources.
 - E1: Mostly equipment procurement specifications to include alternative and/or efficient energy options and consider life cycle costs and benefits.
 - E2: Continue to upgrade airport lighting to efficient LED fixtures (existing). - To be continued (dependent)
 - E3: Convert all office ground service equipment (GSE) to electric or other alternative fuels.
 - E4: Continue to explore and embrace tracking of fuel and in-kind off-wake by fuel.
 - E5: Revisit Masport's alternative fuel contract.
 - E6: Establish a program for upgrading heating, ventilation, and air conditioning (HVAC) systems and associated controls for enhanced energy efficiency.
- Community, Employee, and Passenger Well-being**
Goal: Promote economically prosperous, equitable, and healthy communities and passenger and employee well-being.
 - C1: Passenger Experience: Develop a communication plan to report on aspects of the Airport's sustainability program.
 - C2: Neighboring Communities: Develop a "Spill-over Survey" where airport responses later report the airport's sustainability accomplishments to local communities and determine points of collaboration for future practices.
 - C3: Passenger Experience: Develop an anti-and/or reduce water plan and collaborate with local art districts, cultural societies, educational institutions, and citizens to enhance the Airport art program and raise sustainability awareness through the arts.
 - C4: Employee: Foster the Airport's existing participation in the Business Uplift Series (existing). - To be continued (dependent)
 - C5: Employee: Formalize internal mentoring program for all Masport employees.
 - C6: Employee: Implement sustainable meeting practices, such as no bottled water, compostable paper goods, double-sided printing, and others.
 - C7: Passenger Experience: Work with AIA to have Airport Service Quality (ASQ) surveys include sustainability questions.
 - C8: Employee and Passenger Experience: Highlight sustainability at Masport, its facilities and services, in a new video to be displayed in both employee spaces and terminal buildings.

Barnum Station Identity System

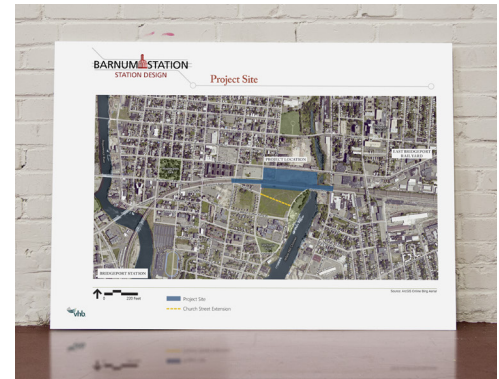
City of East Bridgeport, CT

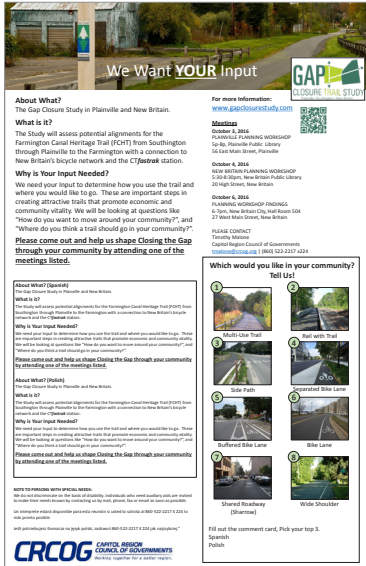
The City of East Bridgeport, CT requested a single identity system that could be used for two projects that are part of the overall Barnum Station initiative (TOD and Station Design). The City wanted to help residents to quickly identify the Barnum Station initiatives, but still differentiate between the two distinct projects when used in various media outlets to alert them to upcoming outreach meetings and project updates.

VHB collaborated with Goody Clancy's design team to develop this project identity. Working together allowed us to gain important insight into the goals of

the two projects, how they would impact the community, and the benefits to local commuters. We met often with the client to review potential brand directions. Ultimately, this led to a successful and cohesive brand that included guidelines, templates, and a web site that each design team could use and update as needed. The Barnum Station brand is a system that is flexible enough to be used by both design teams and the client, as well as a consistent visual identifier to the public.

<http://www.barnumstation.com/landing.shtml>





Before



After

Gap Closure Trail Study Identity System

Capitol Region Council of Governments

The Gap Closure Trail Study is a project identity system that is used to communicate vital project information to the public throughout the life of the project. Our team engaged with multiple stakeholders to understand the project scope, the alternatives and their impact on local residents, and the messages that needed to be conveyed. VHB's logo design, fresh font and color palette, web site, newsletter, and other templates were tools that the client used to inform the public of the project's development and upcoming meetings. The new brand communicates project's goals in a consistent, efficient, and recognizable way.

<http://gapclosurestudy.com/>

Orlando Int'l Airport Interactive Report Cards Greater Orlando Aviation Authority (GOAA)

In an effort to show its commitment to sustainability without printing a large report, GOAA requested a set of interactive report cards to post on their website, that address strategies and goals for the Airport. The challenge was to consolidate and refine data collected information into 1-2 pages for each strategy. VHB worked with the client to determine messaging and supporting data for each strategy. Infographics, type, color, and charts were used to visually tell the Airport's story. The layout and hierarchy of information clearly identifies the goals of each strategy without sacrificing any critical data, and makes it easy for the viewer to navigate and understand the information.

https://orlandoairports.net/site/uploads/Sustainability_Performance_Report_Card.pdf



New York State Strategic Highway Safety Plan (SHSP)

New York State Department of Transportation

The New York State SHSP reveals the main causes and supporting data for vehicle accidents that result in injuries and fatalities. Using the State's brand guidelines and expanding upon them by using charts, hierarchy of type, strong imagery and short, impactful statements, our team created a unique report design that could be easily understood by the reader. The goal of the report was to identify the goals and strategies that the State is taking to keep the public safe, as well as the dangers and consequences of distracted driving, speed, and age-related issues. The report is also 508 compliant for people with disabilities.

https://www.dot.ny.gov/divisions/operating/oss/highway-repository/NYS_SHSP_TotalReport.pdf



Los Angeles World Airports (LAWA) Sustainability Report

LAWA

VHB worked alongside LAWA to design and develop a sustainability report. We integrated LAWA's brand with new aesthetics to better convey the message of their commitment to the environment and community. At project onset, VHB presented two design options to stakeholders to identify which direction would best tell LAWA's story. By meeting regularly at the beginning, we were able to gain a clear vision of the report goals, its importance on public perceptions, and what message would have most impact on its audience. Additional collateral and tools developed to further bring attention to LAWA's efforts were a dashboard, display boards, and skill sheets.

http://www.laxsustainability.org/documents/Sustainability_Report_2016.pdf

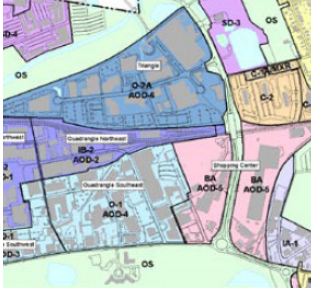
Appendix F—Additional Cambridge Experience



Appendix F

Additional Cambridge Experience

Cambridge project experience can be found on the following pages.



Concord-Alewife Planning Study

Cambridge, MA

Following the city-wide rezoning in 2001, the Concord-Alewife area of Cambridge was recognized as a large area of the city that has significant development potential. The City determined that extensive planning efforts were necessary in order to establish a course of development that met municipally defined Growth Management goals and represented the Cambridge commitment to “smart growth” measures. The City also sought a plan that would address community needs, enhance non-auto accessibility in the Concord-Alewife area, and minimize traffic impacts, but at the same time protect development impacts.

In 2003, VHB was selected to work as part of a multidisciplinary team to develop land-use and zoning changes in support of the planning goals defined by Cambridge. Our contributions included transportation demand management strategies, evaluation of traffic impacts for alternate zoning and land-use scenarios, and planning of transit, pedestrian, and bicycle infrastructure. While developing the plan, VHB worked closely with a Cambridge appointed Study Committee. This outreach program included the support of neighborhood residents, area businesses, property owners, and representatives of area institutions. A major challenge in this process was developing a plan that balanced the needs and expectations of a diverse range of stakeholders. Rising to this challenge, VHB worked with the City to identify a zoning scenario and supporting infrastructure recommendations that would reduce the area’s dependence on motorized transport in the future. New zoning recommendations were approved by the Cambridge City Council in 2006.



NorthPoint Development, Monsignor O’Brien Highway Design and Permitting Services

Cambridge, MA

VHB supported Phase 1A of the project and the gateway phase of the development. Phase 1A included development of two condominium buildings and a large portion of the project’s open space. VHB prepared roadway design plans and assisted with the development of the landscape plans for this phase of the project. The gateway phase included relocation of the Lechmere MBTA station and development of seven blocks. VHB helped the North Point Cambridge Land Company with the National Environmental Policy Act (NEPA) process so that federal funds could be used to support the infrastructure improvements. VHB also completed Massachusetts Environmental Policy Act (MEPA) updates to reflect changes in the project. The project is now being developed by a new partnership of DivcoWest and HYM Investments who has retained VHB as part of their new team. We are providing transportation services and off-site roadway design and engineering. The current design of Monsignor O’Brien Highway includes reconstruction of roadway, seven traffic signals, separated bicycle lanes, improved pedestrian amenities, new drainage system, and enhanced landscape/streetscape features.



Binney Street Project

Cambridge, MA

In January 2007, VHB was retained by Alexandria Real Estate Equities Inc. (ARE) to provide planning, engineering and permitting services for the Binney Street Project in Cambridge. The Binney Street Project is a 1.8-million-square-foot mixed-use development containing predominately research and development (R&D) space adjacent to the East Cambridge neighborhood. The project will be constructed on six sites along Binney Street and will be comprised of 1,513,200 sf of R&D, 20,000 sf of retail, and 220 residential units.



Harvard University On-call Transportation and Engineering

Cambridge, MA

VHB has been providing transportation planning and engineering services to Harvard University for many years. Harvard University owns a substantial amount of real estate in both Cambridge and Boston, Massachusetts. A large portion of this real estate is used for institutional purposes such as educational facilities, housing, museums, athletic facilities, cultural facilities, open space, and parking. Much of the remaining land holdings are occupied by commercial or industrial tenants. For the past several years, VHB has been assisting Harvard with the development of a long-range Master Plan for its Allston Campus. Upon completion of this Master Plan, Harvard retained VHB to provide on-call transportation planning and engineering services related to implementation of the Master Plan and the redevelopment and uses of its land holdings.



Shady Hill School

Cambridge, MA

VHB was selected to work in close cooperation with school staff to identify a range of significant safety and operational difficulties associated with the drop-off and pick-up of students at the school. A complex schedule of student dismissal times further complicated the project, and parking modifications were planned in accordance with various peak demand volumes expected at different times throughout the day. Designed parking modifications that improve conditions within tight site constraints. VHB rapidly completed permitting by closely coordinating with the City of Cambridge.

VHB developed a range of strategies from which school officials selected the options that they felt were most appropriate for their needs. Improvements included both physical modifications and traffic management techniques that would make the drop-off of students more efficient. Additionally, VHB created informational materials for distribution that explained these methods and improvements. We also provided technical support at neighborhood meetings held to explain the new changes. Permitting issues were quickly resolved as VHB coordinated with the City of Cambridge to secure their involvement and support in addressing school concerns.

Cambridge Experience



Greenough Boulevard Greenway Expansion

Cambridge, MA

In a \$1.4 million public/private partnership, the DCR and the Lawrence and Lillian Solomon Foundation are working together to reconfigure and right-size Greenough Boulevard to create a more balanced and appealing greenway. To help them realize this vision, the Solomon Foundations engaged VHB to provide planning, engineering, environmental permitting, and construction phase services related to reducing the roadway surface and expanding the shared use path to a consistent 10-foot width. VHB completed the design reducing the pavement from four lanes (two lanes in each direction) to two lanes (one lane with five foot shoulder in each direction), while maintaining the existing lane configuration at intersections. Pavement will be sawcut and removed and the 10-foot shared use path will be constructed within the new limits of the Greenway. To maintain acceptable stormwater drainage for the roadway and the new path, VHB collaborated with the City of Cambridge and the Watertown Conservation Commissions to identify an appropriate open mitigation system. As part of the project design, the Grove Street pedestrian crossing has been updated to meet current ADA standards. Other design elements include pavement markings and landscaping designed to make Greenough Boulevard a more inviting multimodal experience. Construction began in the Spring 2015.



Oxford Street Traffic Calming

Cambridge, MA

After a request by the City of Cambridge to address traffic issues on roadways near its campus, Harvard University retained VHB to design and implement interim traffic calming measures on Oxford Street between Everett and Garfield Streets. Engineers designed the layout and vertical profile of the new raised intersection, sidewalk reconstruction, and required drainage modifications. To support these preliminary designs, VHB identified the needed pavement markings and signage, access requirements, and pertinent requirements of the Americans with Disabilities Act (ADA) that would shape the project. VHB then designed plans to remove the uppermost layer of pavement on Oxford Street and to construct a pavement overlay, complete with pavement markings in line with City of Cambridge standards. At the intersection of Oxford and Wendell Streets, VHB designed and facilitated the construction of a raised pedestrian crossing with curb extensions (side walk bump-outs). Additionally, VHB engineers provided a modified drainage plan for the newly reconfigured area, realigned the existing granite curbing, and completed the crossing with standard pavement markings and signage.

Appendix G—Required Forms



Appendix G

Required Forms

This section contains the following:

- Non-Collusion Statement
- Non-Discrimination Statement
- Certificate of Tax, Employment Security, and Child Care Compliance
- VHB's W-9

APPENDIX A

Non-Collusion, Non-Discrimination, and Tax/Employment Statements

NON-COLLUSION STATEMENT

State of Massachusetts, County of Middlesex.

Thomas W. Jackmin, PE, ENV SP (name), being first duly sworn deposes and says that:

1.0 He/she is (owner, partner, officer, representative, or agent) of Vanasse Hangen Brustlin, Inc., the Respondent that has submitted the attached Proposal;

2.0 He/she is fully informed respecting the preparation and contents of the attached Proposal and of all pertinent circumstances respecting such Proposal;

3.0 Such Proposal is genuine and is not a collusive or sham Proposal;

4.0 Neither the said Respondent nor any of the officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Respondent, firm or person to submit a collusive or sham Proposal in connection with the Contract for which the attached Proposal has been submitted or to refrain from submitting a proposal in connection with such Contract, or has in any manner, directly or indirectly sought by agreement of collusion or communication or conference with any other Respondent, firm or person to fix the price or prices in the attached Proposal or of any other Respondent, or to fix any overhead, profit or cost element of the Proposal price or the Proposal price of any other Respondent or to secure through any collusion conspiracy, connivance or unlawful agreement any advantage against the Cambridge Redevelopment Authority, the City of Cambridge or any person interested in the proposed Contract; and

5.0 The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Respondent or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

Signed (type name):



Thomas W. Jackmin, PE, ENV SP

Title:

New England Regional Manager

Date:

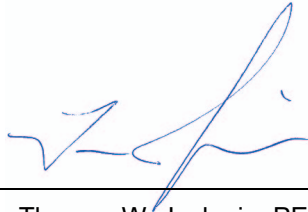
March 26, 2018

NONDISCRIMINATION STATEMENT

The Consultant agrees:

1. The Consultant shall not, in connection with the services under this Contract, discriminate by segregation or otherwise against any employee or applicant for employment on the basis of race, color, national or ethnic origin, age, religion, disability, sex, sexual orientation, gender identity and expression, veteran status or any other characteristic protected under applicable federal or state law.
2. The Consultant shall provide information and reports requested by the Cambridge Redevelopment Authority pertaining to its obligations hereunder, and will permit access to its facilities and any books, records, accounts or other sources of information which may be determined by the Cambridge Redevelopment Authority to affect the Consultant's obligations.
3. The Consultant shall comply with all federal and state laws pertaining to civil rights and equal opportunity including executive orders and rules and regulations of appropriate federal and state agencies unless otherwise exempt therein.
4. The Consultant's non-compliance with the provisions hereof shall constitute a material breach of this Contract, for which the Cambridge Redevelopment Authority may, in its discretion, upon failure to cure said breach within thirty (30) days of written notice thereof, terminate this Contract.
5. The Consultant shall indemnify and save harmless the Cambridge Redevelopment Authority from any claims and demands of third persons resulting from the Consultant's non-compliance with any provisions hereof, and shall provide the Cambridge Redevelopment Authority with proof of applicable insurance.

Signed (type name):



Thomas W. Jackmin, PE, ENV SP

Title:

New England Regional Manager

Date:

March 26, 2018

CERTIFICATE OF TAX, EMPLOYMENT SECURITY, AND CHILD CARE COMPLIANCE

Pursuant to Massachusetts General Laws Chapter 62C, §49A and Chapter 151A, §19A(b) and Chapter 521 of the Massachusetts Acts of 1990, as amended by Chapter 329 of the Massachusetts Acts of 1991,

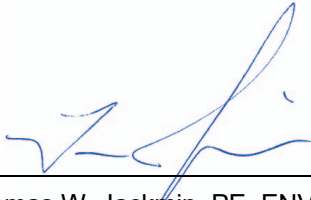
I Thomas W. Jackmin, PE, ENV SP (Name) whose principal place of business is located at 101 Walnut Street, Watertown, MA 02472 (Address), do hereby certify that:

- A. The above-named Respondent has made all required filings of state taxes, has paid all state taxes required under law, and has no outstanding obligation to the Commonwealth's Department of Revenue.
- B. The above-named Respondent/Employer has complied with all laws of the Commonwealth relating to unemployment compensation contributions and payments in lieu of contributions.
- C. The undersigned hereby certifies that the Respondent/Employer (please check applicable item):
 - 1. _____ employs fewer than fifty (50) full-time employees; or
 - 2. offers either a dependent care assistance program or a cafeteria plan whose benefits include a dependent care assistance program; or
 - 3. _____ offers child care tuition assistance, or on-site or near-site subsidized child care placements.

Signed under the penalties of perjury this 26th day of March, 2018.

04-2931679
Federal Identification Number

Signed (type name):



Thomas W. Jackmin, PE, ENV SP

Title: New England Regional Manager

Date: March 26, 2018

Request for Taxpayer Identification Number and Certification

**Give Form to the
requester. Do not
send to the IRS.**

Print or type See Specific Instructions on page 2.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. Vanasse Hangen Brustlin, Inc		
	2 Business name/disregarded entity name, if different from above VHB		
	3 Check appropriate box for federal tax classification; check only one of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶ _____		4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
	5 Address (number, street, and apt. or suite no.) 101 Walnut Street, P.O. Box 9151		Requester's name and address (optional)
	6 City, state, and ZIP code Watertown, MA 02471-9151		
	7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)																																																			
Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see <i>How to get a TIN</i> on page 3.																																																			
Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="10" style="text-align: center;">Social security number</td> </tr> <tr> <td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td><td style="width: 20px;"> </td> </tr> <tr> <td colspan="10" style="text-align: center;">or</td> </tr> <tr> <td colspan="10" style="text-align: center;">Employer identification number</td> </tr> <tr> <td style="width: 20px;">0</td><td style="width: 20px;">4</td><td style="width: 20px;">-</td><td style="width: 20px;">2</td><td style="width: 20px;">9</td><td style="width: 20px;">3</td><td style="width: 20px;">1</td><td style="width: 20px;">6</td><td style="width: 20px;">7</td><td style="width: 20px;">9</td> </tr> </table>	Social security number																				or										Employer identification number										0	4	-	2	9	3	1	6	7	9
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Part II Certification	
Under penalties of perjury, I certify that:	
1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and	
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and	
3. I am a U.S. citizen or other U.S. person (defined below); and	
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.	
Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.	
Sign Here	Signature of U.S. person ▶
	Date ▶ 3/26/18

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at www.irs.gov/fw9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding? on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.



www.vhb.com