Town of Carrboro Planning Department

September 10, 2015

Parking Study for the Town of Carrboro, NC

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1 Cover Letter

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September 10, 2015

Ref: RFP #540-2016-01

Bergen Watterson, Project Manager
Town of Carrboro
301 W. Main St.
Carrboro, NC 27510

Re: Parking Study for the Town of Carrboro Request for Proposals

Dear Ms. Watterson:

VHB Engineering, NC, P.C. (VHB) is pleased to provide our response to the Town of Carrboro's Request for Proposals (RFP) for providing consulting services relating to the development of a Parking Study for the Town. VHB's Raleigh office specializes in the type of transportation planning services required by the Town. We have completed several projects in Carrboro, including a traffic study at East Main Street and a Road Diet, Pavement Marking, and Traffic Circulation Study for West Main Street and the adjacent Oak-Poplar neighborhood. In addition, our team's transportation specialists are well versed in the completion of parking plans, having just completed the Town of Wilson's parking plan and currently finalizing work on the City of Concord's parking plan.

I will serve as Principal-in-Charge for this project and will provide support to our Project Manager, Mr. **Timothy Tresohlavy, AICP, GISP**. Timothy is an experienced project planner, with parking study, bicycle and pedestrian planning, long-range and comprehensive transportation planning, campus master planning, and GIS/modeling experience. Timothy served as Project Manager for the downtown Wilson parking study and is currently leading efforts for the Concord parking study. As Principal-in-Charge, I will make sure that Timothy and the project team have the resources necessary to successfully complete Carrboro's parking study, drawing upon my recent experience supporting Timothy on the Wilson and Concord parking plans.

VHB is a corporation without DBE status, and the firm and its owners are not involved in any activity that may constitute a conflict of interest in pursuing this assignment, or in executing work for the Town of Carrboro. VHB also acknowledges receipt of the substantial question answers.

We are confident that our experience and knowledge can make an important contribution toward improving the parking and mobility in the Town of Carrboro. Please do not hesitate to contact me at **919.334.5616** or **billmartin@vhb.com**, or Timothy at **919.741.5506** or **ttresohlavy@vhb.com**, if you need additional information or have any questions.

Sincerely,

William A. Martin, Jr., PE
Principal

Engineers | Scientists | Planners | Designers

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Suite 530
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2 Firm Experience, Knowledge, Familiarity, and Past Performance with Desired Services

Firm Experience, Knowledge, Familiarity, and Past Performance with the Desired Services

Project Understanding

The Town of Carrboro has made significant investments to improve transit, bicycle, and pedestrian modes of travel within downtown. The current parking system balances these modes of travel for the mixture of civic and private business uses and complements the public's diverse culture.

Parking supply constraints are unique to every downtown, and Carrboro is no exception. There are limited opportunities for on-street parking along Main Street and Weaver Street. Due to this, Carrboro's vehicular storage is relegated to the areas behind restaurants, shops, and offices, leaving the front side available for biking and walking – a beneficial development trend for both the Town and its merchants.

Forecasting future parking demand is a planning effort that should be continually analyzed and updated. The most recent future parking demand estimation for Carrboro, completed in 2008, recommended that improvements to pedestrian amenities, such as sidewalk connections and street lighting, would have the greatest return on investment regarding future parking demand reduction. This study found that Tuesday evenings represented the period of greatest parking demand, and that the 300 block of East Main Street represented the location with the highest estimated future parking demand. The most significant finding was that the central business

district of Carrboro experiences a high vehicle turnover rate (only 20% of vehicles were found to be parked for greater than the posted 2-hour limit) for public parking lots.

Current perspectives on downtown parking focus on active parking management, which requires the regular collection of peak parking occupancy data in combination with minor adjustments to either price, time limits, enforcement efforts, or supply to maintain a targeted 85% occupancy rate in proximate and periphery lots. This approach requires vision, personnel, and support from not only merchants, but Town officials. One of the keys to successful active parking management is offering multiple travel options to the diverse groups of citizens looking to visit downtown. These groups include employees, store owners, customers, tourists, and residents. Each group should be offered multiple options for parking, walking, bicycling, or riding transit and allowed the freedom of choice with tradeoffs. Falling short of this goal will only perpetuate the incorrect perception that "there is no place to park downtown." Previous parking occupancy studies in Carrboro have found that, even during the busiest time of the busiest day of the week, there are plenty of places to park downtown.

VHB's approach for this parking and mobility study will be:

- to inventory the existing supply of public and private downtown parking;
- to determine the utilization of the current parking resources;
- to reach out to downtown businesses, developers, parking operators, residents, local governments, and other stakeholders in the study areas to identify their specific parking perspectives and issues;
- to estimate future parking demand generated by new land uses within downtown, based on the best available assumptions for land use and building square footages;
- to revise these assumptions based on demographic data, regional trends, and direction from the Town;
- to develop a five (5) year parking plan that balances supply and demand with available travel demand management (TDM) strategies; and
- to prepare parking management plan recommendations for the Town to provide parking management options that fit the unique and diverse culture of the Carrboro community.

Parking Study Experience

VHB has extensive experience in parking studies and the design of parking facilities. We have prepared parking plans and strategies for many university campuses, as well as municipalities, including forecasting future needs, evaluating sites and undertaking feasibility studies for parking decks and surface parking, and developing TDM measures for reducing parking demand. A key goal of any parking study is to ensure that parking and its management is not only well engineered, but also supports the client's economic and environmental goals, such as downtown revitalization or campus growth. We also assist architects and engineers in the design of facilities, including layout and circulation, access for cars and pedestrians, street improvements, park-and-ride, and preparing traffic impact studies. The following section provides project descriptions of similar studies to the Town of Carrboro Parking Study.

Relevant Experience

Road Diet, Pavement Marking, and Traffic Circulation Study

Carrboro, North Carolina

Client
Durham-Chapel Hill-Carrboro MPO

VHB completed a two-part project under an on-call contract. The West Main Street Road Diet and Pavement Marking Study examined the feasibility of a road diet application on a section of West Main Street in Carrboro, while the Oak-Poplar Neighborhood Traffic Circulation Study was a transportation study for the adjacent Oak-Poplar neighborhood. The road diet study consisted of traffic and level of service assessment; feasibility, need, and impact analysis; and a draft pavement marking plan for the proposed road diet treatment. The neighborhood traffic circulation study identified existing and projected multimodal transportation concerns in the adjacent Oak-Poplar neighborhood, including any impacts from the road diet.

The two studies were jointly conducted and involved multiple public meetings, including a neighborhood walk with residents to identify specific concerns and issues. The road diet pavement marking concept was presented to the North Carolina Department of Transportation (NCDOT) for implementation. The neighborhood traffic study identified a number of issues for more in-depth study to improve mobility and access for the Oak-Poplar neighborhood.

Shelton Station Traffic Impact Analysis

Carrboro, North Carolina

Client
Belmont Sayre, LLC

VHB completed a traffic impact analysis for a proposed mixed-use development located at 500 North Greensboro Street in Carrboro. VHB calculated the traffic associated with the 114 mid-rise apartment units and 12,000 square feet of neighborhood retail space and assessed impacts along the adjacent roadway network. Roadway and multimodal improvements were recommended for the new development.

300 East Main Street Traffic Study

Carrboro, North Carolina

Client
Main Street Properties

VHB performed a traffic study for a 400,000 square foot redevelopment project in downtown Carrboro. The mixed-use project consisted of office, residential, retail, and an art museum. VHB determined traffic and parking reductions as a result of the mixed-use nature of the development and its proximity to transit and walkable downtown destinations. Anticipated trips generated by the site were distributed to the surrounding street system, and VHB recommended geometric, signalization, and pedestrian safety measures in conjunction with the new development. VHB also prepared innovative signal phasing for the site's primary driveway, including railroad preemption and signal design plans.

Downtown Wilson Parking Analysis

Wilson, North Carolina

Client
City of Wilson, North Carolina

VHB led a study to assess the parking capacity in downtown Wilson, North Carolina. In order to determine if there is sufficient capacity in the existing parking supply to convert some public parking to residential parking associated with a planned development, VHB conducted an inventory of parking supply and demand within the nine block study area. The field inventory conducted counted the total and occupied number of on- and off-street parking spaces by lot/location for six categories of use. VHB analyzed minimum vacancy rates by block and for the entire study area to determine if there is sufficient excess capacity to convert 18 to 54 public spaces into residential spaces. VHB documented the data, methodology, and recommendations in a technical memorandum, which was submitted to the City of Wilson.

In a follow-up study, VHB expanded the study area to include 35 total city blocks. Through interviews with municipal and private business stakeholders, the project team performed an analysis of the existing operational management and recommended improvements to the City's parking system. We incorporated future development projects into a parking demand model to test the future parking supply against the expected parking demand in 2020. VHB used this scenario analysis to inform the overall strategic parking plan and report for the client. The project team also reviewed and made recommendations for changes to the City's parking lease agreement for private developments.

Parking Management Study

Concord, North Carolina

Client
City of Concord, North Carolina

VHB assisted members of the City of Concord, Cabarrus County, and the Concord Downtown Development Corporation in quantifying existing supply and forecasting future demand for an 18-block study area. The existing conditions analysis has found the County Court schedule has the greatest impact on weekday parking demand, with peak parking demand occurring on Mondays between 10 and 11 am. The study further observed that on-street parking occupancy regularly exceeded 90% for nearly all of the two-hour time restricted parking areas. VHB also examined the feasibility of expanding sidewalk widths for restaurant dining opportunities and parklet opportunities, while mitigating on-street parking losses and minimizing impacts to traffic operations.

Recommendations to the City include varying low-cost, quick-win strategies to more evenly distribute peak parking demand across all parking facilities through programmatic improvements addressing education, encouragement, and enforcement efforts. These recommendations are aimed at delaying the need for much longer-term recommendations, specifically the potential for Public-Private Partnership construction of a parking garage on one of three County parking lots.

Parking by Lot Code, Class, and Occupancy

			Lot Type 1		Parking by Class							Occupancy 10:30 AM		Occupancy 1:30 PM	
Lot Code	Lot Name	Spaces	Lot	Street	Reg	Emp	Visit	Rent	Rsv	HC	LZ	Vehicles	% Occu	Vehicles	% Occu
AD	Alamance Dental Associates	10	10				10					9	90%	6	60%
AS	Amtrak Train Station	101	101				95			6		43	43%	37	37%
AT	AT & T	24	24			20					4	13	54%	11	46%
BC	Burlington Co-op	12	12		11					1		4	33%	5	42%
FC	First Christian United Church	109	109				99		2	8		1	1%	2	2%
FD	Burlington Fire Dept	37	37				29		2	1	5	16	43%	15	41%
FM1	Front St. United Methodist Church	21	21				21					7	33%	7	33%
FM2	Front St. United Methodist Church	75	75				75					16	21%	22	29%
FR	Front St.	71		71	65					1	5	51	72%	53	75%
FS	First State Bank	36	36				34			2		14	39%	15	42%
GS	Goodwill Shopping Center	56	56				54			2		20	36%	14	25%
LC1	Lab Corp.	35	35			27	3			2	3	34	97%	30	86%
LC2	Lab Corp.	28	28			28						23	82%	27	96%
LC3	Lab Corp.	113	113			109			3	1		94	83%	104	92%
LC4	Lab Corp.	294	294			291				3		137	47%	151	51%
LC5	Lab Corp.	59	59			51				8		58	98%	59	100%

Downtown Parking Study

Burlington, North Carolina

Client
City of Burlington, North Carolina

VHB was part of the team for the Burlington Downtown Parking Study. VHB performed a field inventory of 3,200 parking spaces within 109 unique parking lots spanning a 31 block area of downtown Burlington. The team verified parking spaces by type and performed AM/PM occupancy counts to quantify peak parking demand. VHB also conducted an hourly parking turnover analysis (between 8 am and 5 pm) along a specified five block on-street parking area with one-hour and two-hour parking restrictions. VHB staff met with city officials, private employers, the Burlington Downtown Corporation, and the general public to discuss the scope of study, collect stakeholder observations, and solicit opinions on alternative management strategies for parking operations.

VHB's project deliverables included a series of GIS maps displaying the parking space inventory, occupancy, and availability of parking for each block and lot. The field-verified data were used to construct a GIS geodatabase that quantified parking supply and demand before exporting into spreadsheets and report tables.

The results of the occupancy study indicated much higher availability than perceived for a majority of the downtown area. On-street parking occupancy, however, specifically within the center of downtown, was found to be very high as a result of vehicles 'shuffling' between spaces every two hours to avoid parking citations within these restricted areas. This phenomenon was confirmed by the turnover analysis, observing the same vehicle within adjacent parking spaces (or returning to the same space) multiple times between 8 am and 5 pm.

Raleigh Livable Streets Study

City of Raleigh, North Carolina

Client
City of Raleigh, North Carolina

VHB was selected by the City of Raleigh to develop a transportation plan for the core area of downtown Raleigh. The plan recognized and supported many redevelopment and planning efforts already underway and identified immediate, near-term, and long-term actions. Recommended transportation actions included parking management strategies, modifications to the signage of downtown streets (wayfinding), and modifications to the transit routes in the area. Near-term solutions included modifications to the streetscape and improvements to the sidewalk system. Long-term actions were more capital-intensive projects that can take three to five years to plan, design, and implement. The analyses performed for this study led to subsequent studies to begin the conversion of the one-way streets in the downtown area to two-way operation.

Fayetteville Street Renaissance Phase 1

City of Raleigh, North Carolina

Client
City of Raleigh, North Carolina

VHB was part of the design team for the Fayetteville Street Renaissance, a major step in the process to revitalize the downtown area of Raleigh, North Carolina. As part of Phase 1 of the Fayetteville Street Renaissance, VHB prepared plans for the functional design of Martin Street and Hargett as two-way streets and reopening Fayetteville Street to vehicular traffic. A major component of this study was modifications to the on-street parking on Fayetteville, Martin, Hargett, Wilmington, and Salisbury Streets. In addition, VHB assessed the proposed operation of those streets and developed signal plans for 19 traffic signals affected by the changes in traffic patterns in the downtown area.

Raleigh Downtown Parking Study

Raleigh, North Carolina

Client
City of Raleigh, North Carolina

VHB was part of the team for a study that assessed Raleigh's current and future parking supply and demand and ways to manage that demand. VHB's focus in this study was on how Travel Demand Management (TDM) and transit can not only provide travel alternatives, but also reduce the need to build additional parking decks in the future. This involved assessing existing and proposed services, ridership and TDM programs, developing additional measures that the City could take, and understanding how much these could realistically contribute to meeting the future parking demand. The City is committed to a regional approach to TDM efforts, so a key factor is what the City can do to boost efforts in downtown Raleigh while retaining the regional framework.

Winston-Salem Downtown Parking Study

Winston-Salem, North Carolina

Client
Winston-Salem Downtown Partnership

VHB assisted the Winston-Salem Downtown Partnership to resolve current and future parking needs on Fourth Street - the core of downtown and a focus of regeneration efforts. The study quantified existing parking supply and demand, treating short-stay and long-stay parking separately. The study then forecasted future regeneration-led demand growth, involving the development of bespoke demand forecasts to reflect key changes and local conditions. The study found a deficit of short-stay parking in certain areas and recommended a coordinated package of solutions, including traffic engineering measures to create new spaces, management measures to make better use of existing spaces, and streetscape improvements to link demand sources to vacant spaces.

Eubanks Park & Ride Feasibility Study

Chapel Hill, North Carolina

Client
Town of Chapel Hill, North Carolina

Park-and-Ride has long been an important component of the Town of Chapel Hill's transportation system. The system is reaching its capacity, and additional facilities are needed to continue reducing auto-based traffic demand, traffic congestion, and associated environmental impacts to the community. An important component of the Park-and-Ride system is the facility location on Eubanks Road. The Eubanks Road Park-and-Ride facility currently serves Chapel Hill Transit (CHT) riders, Triangle Transit Authority (TTA) riders, and carpoolers.

The Town of Chapel Hill and Chapel Hill Transit (CHT) retained VHB to prepare a feasibility study to explore the expansion of the Eubanks Road Park-and-Ride facility. This expanded facility is intended to accommodate anticipated increased travel demand and transit ridership along the Martin Luther King, Jr. Boulevard corridor. By providing this additional capacity, the Town can help meet the region's travel needs; increase transit usage; reduce air pollution; and enhance economic development, compared to a scenario in which this form of transportation capacity is not provided. This feasibility study assesses the existing site and the possibility of expanding to the adjoining parcels, evaluates possible alternative sites, develops conceptual site layouts, and provides estimates of capital costs and operating cost for the facility.

University of North Carolina at Chapel Hill Streetscaping

Chapel Hill, North Carolina

Client
University of North Carolina at Chapel Hill

VHB developed a concept plan for the University of North Carolina at Chapel Hill to narrow South Columbia Street and add streetscape improvements. In an effort to enhance its pedestrian friendliness, yet still maintain an appropriate level of capacity on the roadway, VHB developed a concept plan to remove one travel lane and convert the area into wider sidewalks and new planting areas. VHB was a member of the design team that developed construction documents for upgrades, improved pedestrian access, and provided exclusive facilities for bicyclists and transit vehicles in the corridor. VHB developed plans for pavement marking, signage, temporary traffic control during construction, and traffic signals. VHB prepared traffic signal plans for upgrades at an existing mid-block pedestrian activated signal and for a new installation at the intersection of South Columbia Street at Medical Drive. VHB's services included coordinating the design and all permitting issues between the design team, the University, the Town of Chapel Hill, and the North Carolina Department of Transportation.

UNC-Chapel Hill Wayfinding Plan

Chapel Hill, North Carolina

Client
Cloud Gehshan Associates

VHB is part of the team developing a new wayfinding system for the University of North Carolina at Chapel Hill. VHB is leading tasks to identify the location of new signs and to develop a message schedule for all new vehicular wayfinding signs. We are also coordinating with UNC, the Town of Chapel Hill, and the North Carolina Department of Transportation to gain approval for the location, fabrication, and messages on the proposed signs.

University of North Carolina On-Call Contract

Chapel Hill, North Carolina

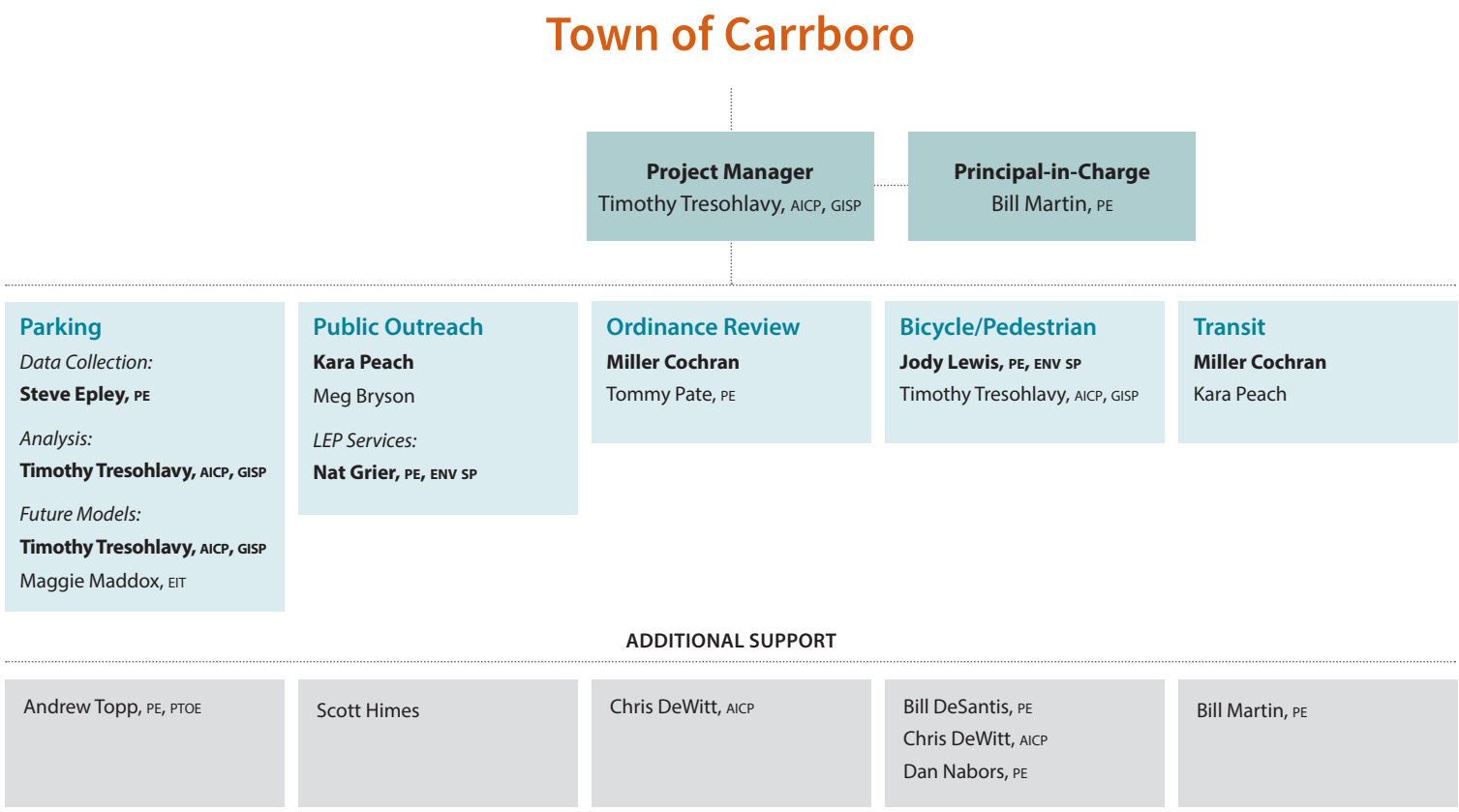
Client
University of North Carolina at Chapel Hill

VHB has been providing on-call services under a multi-year contract to assist the University of North Carolina at Chapel Hill (UNC) implement its Development Plan. This plan will add approximately six million SF to the main campus over a period of eight years, representing more than 50% of the new floor space identified in the campus Master Plan, which was completed in 2001. Because of traffic, land use, and environmental constraints, the Development Plan adds only 1,550 parking spaces to the main campus, compared to more than 4,500 spaces that would be needed if parking continues to be provided under pre-Development Plan ratios. Significantly, almost all of the 1,550 new spaces are allocated to the UNC hospital's patients and visitors, creating only a very small increase for employees and a net loss for students. Therefore, the Plan emphasizes alternative commuting modes.

In addition, a key component of VHB's services involves preparing and biennially updating a Traffic Impact Analysis (TIA) to be submitted to the Town of Chapel Hill to rezone the campus. VHB helps the University and Town develop guidelines for scoping the content and requirements of the TIA, including ongoing monitoring and data collection. The TIA details and quantifies the trip reduction strategies that are proposed, including local transit, regional transit, park-and-ride, remote storage parking for resident students, and bicycle/pedestrian improvements. VHB develops projections of use of these alternative modes. The analysis also provides an assessment of increased traffic and the impact on a total of 59 intersections on and near the campus (a simulation model has been developed for this purpose), and it calculates the air quality benefits of the transportation mitigation strategies.

Organizational Chart and Team Resumes

VHB's Raleigh office is home to over fifty transportation professionals available to support the Town of Carrboro. The organizational chart below outlines the specific team chosen to perform the services under this contract, and resumes for the key team members are found in the following pages. Team resumes outline each member's experience, expertise, and availability.



Timothy Tresohlavy, AICP, GISP

Project Manager

Timothy will serve as Project Manager. He has been a key team member of many of VHB's parking projects and previously worked for North Carolina State University as the Parking Planner. His specialization is in the development of spreadsheet databases, visualization of spatial datasets using GIS, thematic mapping, and geodatabase construction. His experience includes campus master plans, parking studies, bike/pedestrian planning, environmental assessment projects, long-range and comprehensive transportation planning, network modeling, and traffic noise modeling.

Education

MA, Human Geography, East Carolina University, 2006

BS, Environmental Land Use Planning, SUNY College of Environmental Science & Forestry, 2003

Registrations

American Institute of Certified Planners, 2010

Certified Geographic Information System Professional, 2011

Affiliations/Memberships

American Institute of Certified Planners, North Carolina, 2010

Percent Time Available: 60%

Downtown Parking Study, Wilson, NC

For the City of Wilson, Timothy facilitated project steering committee meetings, and conducted more than 27 stakeholder interviews to synthesize local perspectives. The downtown study area included 3,400 parking spaces across a 35 block area. VHB performed a comprehensive parking space inventory, and conducted a peak period occupancy analysis to determine the existing parking demand and raw surplus of availability. Working closely with the City, Timothy forecasted future parking demand based on available land use types and square footage estimates over a 10-year time frame. Results from the parking supply and demand analysis, along with recommendations for parking management scenarios, were presented to the client and summarized in a final report document.

Downtown Parking Study, Concord, NC

As project manager, Timothy organized a four-day data collection effort of existing conditions, synthesized the findings and presented the results to the project steering committee members, downtown merchants, and members of the City Council. Working closely with City staff, Timothy projected future parking demand over a five year period and identified locations of parking demand shortfall and surplus. Preliminary recommendations have been presented to the steering committed relating to parking management strategies that will educate, encourage, and enforce the established vision and goals of active parking management with downtown Concord.

Downtown Parking Study, Burlington, NC

For the City of Burlington, Timothy performed a GIS-based parking space inventory, occupancy, and turnover analysis for 3,200 parking spaces, within 109 unique parking lots, across a 31-block study area. The Data Driven Pages extension of ArcGIS helped to automate the preparation of field inventory maps for the data collection phase. Results from the parking analysis were presented at the public kickoff meeting.

Wake Forest University, Parking Operations Plan, Winston-Salem, NC

Timothy created a five-year implementation plan for improving parking operations and establishing the University's first employee permit fee. He created a geographic-based forecast model to estimate the minimum number of permits (by type, location, and price) to sell each fall semester to remain financially solvent. Timothy also recommended bicycle, pedestrian, and transit improvements that will support the changing parking operations system.

UNC-Charlotte, Parking Operations Modeling, Charlotte, NC

Timothy created an operations-based spreadsheet database to forecast permit sales and revenue based upon incremental changes to the permitting and parking zone system. The forecast model included the financing of new park-and-ride shuttles as well as the construction of all campus Master Plan parking deck projects.

North Carolina State University, 2012 Precinct Parking Study, Raleigh, NC

Prior to joining VHB, as the NC State University Parking Planner, Timothy managed the collection of field data, analyzed, and formulated results to assess existing and planned parking facilities at North Carolina State University. Future parking demand included a five-year population growth by the University to determine proximate parking demand and supply shortfall for five campus precincts. This analysis helped to guide the department's master planning efforts for development through 2012. This keystone study provided quantitative data in support of planning efforts for three university parking structures, and potential disruptions to parking and transit daily operations due to building renovation projects.

Raleigh Bike Share Feasibility Study, Raleigh, NC

Under phase one of this project, Timothy reviewed state and local transportation plans as well as City of Raleigh development ordinances and design guidelines to identify any potential barriers to bike share station implementation. His analysis also included a permitting review matrix to better explain the permitting review authorities for each of the five unique bike share station location types. Under phase two of the project, Timothy assisted with the design of standardized, and module, bike share station layouts within AutoCAD.

East Carolina University, Campus Physical Master Plan, Greenville, NC

Timothy conducted an existing conditions assessment of the campus parking and traffic department and surrounding transportation network. Using three proposed future master plan build scenarios. He quantified future parking impacts and estimated future parking demand (2025) to inform the project team. Additional work performed included annual permit sales and revenue forecasting, citation trend analysis, peer university benchmarking of parking supply, and permit price comparison.

University of Delaware, Parking Operations Modeling, Newark, DE

Timothy created a spreadsheet database tailored to the existing conditions of the University of Delaware campus precincts and used this tool to model the financial result of operational changes to the parking and transit system over a five-year period. Timothy generated report figures and prepared meeting slides to explain the model variables, as well as the planning-level existing conditions assessment.

North Carolina State University, GIS-based Parking Inventory, Raleigh, NC

Prior to joining VHB, as the NC State University Parking Planner, Timothy constructed a complete geographically-referenced parking inventory for on-campus parking areas. This interdepartmental tool streamlined decision-making processes and departmental policy relating to parking management, annual permit allocation, proposed renovation/construction and master planning, transit service optimization, campus special event coordination, and others. The project included establishing procedures for annual parking occupancy count collection, reporting, and archiving to maintain the accuracy and applicability to other departmental sections within North Carolina State University.

Blue Ridge Road District Study, Raleigh, NC

For the City of Raleigh, Timothy compiled and synthesized existing conditions data for the project design team relating to bicycle, pedestrian, traffic, parking, and transit modes. He used ArcGIS to compile and overlay multi-jurisdictional development plans for public and private stakeholders within the study area. As the project progressed Timothy contributed to a public visioning workshop, stakeholder kickoff meeting, multiple design charrettes, and final design option presentations. He recommended improvements for connecting roadways and recreational areas, removing barriers to alternative transportation modes, and improving safety along the study corridor.

Western Carolina University, Campus Master Plan, Cullowhee, NC

As a project team planner, Timothy developed a 10-year parking supply and demand model, including various travel demand management options to balance parking demand during interim years. This work included a peer benchmarking analysis between WCU and 13 other peer universities, which involved the review of parking permit fees, transit system characteristics, and campus demographics.

Bill Martin, PE

Principal-in-Charge

Education

MS, Civil Engineering, North Carolina State University, 1978

BS, Civil Engineering, North Carolina State University, 1976

Registrations

Professional Engineer NC, 1994

Affiliations/Memberships

American Council of Engineering Companies, North Carolina, ACEC-NC Board Member

Institute of Transportation Engineers, North Carolina, NC Section President 2005

Bill will serve as Principal-in-Charge. He has over 30 years of experience in transportation planning and engineering. His relevant experience includes serving as Project Manager on the Winston-Salem Parking Study and the Downtown Cumberland County parking project, as well as the Downtown Study for Charlottesville, VA. For the Winston-Salem project, Bill personally led the meetings with stakeholders and business leaders to determine parking and traffic problems.

Percent Time Available: 40%

Downtown Parking Analysis, Wilson, NC

Project Manager for this initial study of parking capacity in downtown Wilson, North Carolina. An inventory of parking was conducted to determine the supply and demand for parking within a nine block study area with the purpose of identifying surplus parking supply that could be dedicated for a proposed residential project in the downtown. The data, methodology, and recommendations were documented in a technical memorandum submitted to the City of Wilson.

Downtown Parking Plan, Wilson, NC

Principal-in-Charge for this follow-on study of parking capacity in downtown Wilson, North Carolina. The downtown study area included 3,400 parking spaces across a 35 block area. VHB performed a peak period occupancy analysis to determine existing parking demand and raw surplus of availability. Working closely with the City, VHB forecasted future parking demand based on available land use types and square footage estimates over a 10-year time frame. Results from the parking supply and demand analysis, along with recommendations for parking management scenarios, were presented to the client and summarized in a final report document.

Downtown Parking Study, Burlington, NC

Principal-in-Charge for this study of the downtown parking in Burlington, NC.

Downtown Parking Study, Charlottesville, VA

Project Manager for study that analyzed occupancy survey data to understand the extent of the problem. Advised on management options to encourage commuters into off-street lots and liberate on-street spaces for customers and visitors. Also developed recommendations to make the designation of individual spaces more consistent and comprehensible than today's piecemeal arrangements.

Downtown Parking Master Plan, Raleigh, NC

As Project Manager, provided transit and TDM expertise for this study. Advised on whether (and how) these can mitigate commuter parking demand; included review of experience from other cities.

Downtown Parking Study, Winston-Salem, NC

Project Manager for the analysis of short and long term parking demands in the CBD of Winston-Salem. Made recommendations for changing the parking utilization in the area.

Downtown Parking Study, Fayetteville, NC

Project Director for the development of a parking plan for the CBD of Fayetteville, NC. Tasks included the estimation of demand for future parking, the size of required parking structures, and the analysis of alternative sites.

Fayetteville Street Renaissance Project, Raleigh, NC

Project Manager for the traffic and parking tasks of the overall project that restored Fayetteville Street in Raleigh from a pedestrian mall to an urban street. Project involved signal design plans, pavement

marking plans, signing plans, and revised parking for on-street parking. A major task was to convert two streets, Martin and Hargett Streets, from one-way to two-way operations.

Raleigh Livable Streets Transportation Plan, Raleigh, NC

As Project Manager developed a plan that addressed traffic flows, parking, transit, pedestrian, and wayfinding within the central business district. A major recommendation of the plan was to convert most of the east-west streets in the downtown from one-way to two-way operations.

Downtown Parking Study, Charlottesville, VA

Project manager for study that analyzed occupancy survey data to understand the extent of the problem. Advised on management options to encourage commuters into off-street lots and liberate on-street spaces for customers and visitors. Also developed recommendations to make the designation of individual spaces more consistent and comprehensible than today's piecemeal arrangements.

North Carolina State University, Traffic Analysis Study, Raleigh, NC

Project manager for traffic analysis study of parking deck expansion, and helped performed plan transit stop locations and configurations.

Transit Technology Feasibility Study, Raleigh, NC

As Project Manager, leading this study designed to explore a variety of different transit technologies and corridors where their use may be feasible in the City of Raleigh. This process will involve identification of base conditions, development of alternatives, and evaluation of the alternatives.

Triangle Transit Regional Transit Program, NC

Responsible for planning services as part of multidisciplinary team undertaking a major study for Triangle Transit to develop three rail projects for the 3-county Research Triangle region, North Carolina.

South Corridor Transitway Major Investment Study, Charlotte, NC

As Project Manager, evaluated the impacts of various combinations of land use and transit technologies (light rail, busway, DMU) in the South Boulevard corridor.

Transit Corridor Modeling, Charlotte, NC

As Project Manager, Mr. Martin provided travel demand forecasts and performance measure analysis for fixed-guideway transit alignment/technology/land-use alternatives.

Steve Epley, PE

Parking: Data Collection Task Manager

Education

BS, Civil Engineering, University of North Carolina at Charlotte, 1998

Registrations

Professional Engineer NC, 2008

Steve has diverse experience in traffic engineering and transportation planning. His experience includes transportation design and planning projects involving vehicle, pedestrian, and bicycle issues, as well as roadway analysis and recommendations. Steve is proficient in the use of software tools including Synchro/SimTraffic, Highway Capacity Software (HCS), ITE Trip Generation, Sidra Intersection, PetraPro, TraxPro, Microstation/Geopak, Autoturn, Eagle Point, Norsonic, and Engineering Manuals including AASHTO, HCS, and MUTCD.

Percent Time Available: 40%

BASF Parking Analysis, Durham, NC

Steve was the Project Engineer for a parking analysis study at the BASF Durham location. Project conducted a parking analysis for 393,000 square feet of office/lab/storage space and 70,000 square feet of greenhouse space. Analysis included collecting the current parking demand at the existing plant and determining the future demand after expansion. Traffic analysis included collecting number of on-site parking spaces and two 48-hour tube volumes counts.

UNC-Chapel Hill, Craige Deck Expansion, Traffic Impact Analysis, Chapel Hill, NC

Steve was the Data Collection Engineer on a multidisciplinary team for the University of North Carolina (UNC) at Chapel Hill Craige Deck Expansion project. Project included the coordination and collection for one 16-hour turning movement count and ten 2-hour peak hour counts (am, noon, pm) at the University. Project proposed to expand Craige Deck by the addition of three new parking levels and 900 new parking spaces.

UNC-Chapel Hill, Hospital at Hillsborough, Hillsborough, NC

Steve was the Project Engineer for a Trip Generation Analysis and Traffic Impact Analysis for the University of North Carolina (UNC) at Chapel Hill Hospital at Hillsborough, a new development consisting of a 600,000-square-foot hospital, an 180,000-square-foot medical office building, and a 30,000-square-foot central utilities plant. Project required analyzing potential impacts and recommending traffic mitigations projected by the new project at the site driveways under Existing and Future conditions. Project also included internal traffic analysis and concept roadway drawings for the driveway intersections and internal roadways.

Town of Cary On-Call Data Collection Services

Task Manager for an agreement with the Town of Cary to conduct on-call data collection services.

North Carolina State Fairground Traffic Impact Study, Raleigh, NC

Project engineer responsible for analyzing traffic operations for vehicle, pedestrian, and bicycle modes during non-State Fair events. It included traffic counts, turning movement, pedestrian facility/operations, bicycle facility/operations, parking, event growth, crash, and future development analysis.

NCDOT, On-Call Statewide Traffic Count Program, North Carolina

Steve is serving as the Project Engineer for the collection of turning movement counts and roadway tube counts on as-needed basis for the NCDOT. Responsibilities include scheduling traffic counters, organization of count data, sketching intersections in CAD, and writing report summaries. Counts have included vehicle turning movement (2 peak hour, 8-hour, 12-hour, 13-hour and 16-hour), vehicle classification turning movement (12-hr and 13-hour), pedestrian movement (2 peak hour, 12-hour and 16-hour), and tube volume/classification movement (24-hour, 48-hour, and 5 day) counts. Some counts have involved multiple counters (1, 2, 3, and 4 person intersection teams) and/or simultaneous intersection counting (226 Turning Movement Counts, 318 Tube Counts, 3 Pedestrian Counts, and 15 Specialized Counts).

Maggie Maddox, EIT

Parking: Future Model

Maggie specializes in transportation systems engineering and transportation planning. She has a unique combination of work experiences, education, and research that have focused at various times on traffic engineering, pavement design, transit planning, transportation planning, transportation engineering, travel demand modeling, and transit mapping. She is currently working towards both her PE license and AICP certification.

Percent Time Available: 40%

Education

MCRP, Planning, Georgia Institute of Technology, 2013

MS, Civil Engineering, Georgia Institute of Technology, 2013

BS, Civil Engineering, Villanova University, 2011

Registrations

Engineer in Training PA, 2011

Affiliations/Memberships

WTS International, Georgia, Programs Committee, 2014

American Planning Association, Georgia

MARTA Clifton Corridor EIS, GA

Mrs. Maddox has provided supporting traffic analysis for the project study area to identify existing intersection LOS and model anticipated traffic impacts of light rail along this corridor. This has included working with VISSIM outputs, GIS mapping and spatial analysis, as well as participation in public meetings to answer questions of local residents.

MARTA Engineering Report, Clayton County, GA

Mrs. Maddox worked to compile the engineering report, an exhibit to the proposed contract for MARTA to provide services into Clayton County. This entailed working with MARTA directly as well as a team of consultants for bus and rail design, an implementation timeline, ridership modeling, and cost estimation. Mrs. Maddox performed GIS mapping services and patronage estimates using the ARC Regional Travel Demand Model.

Transit Feasibility Study, Clayton County, GA

Mrs. Maddox performed the demographic analysis and transit propensity assessment of Clayton County to determine the feasibility of transit services in the county. Additionally, Mrs. Maddox assisted with ridership forecasts for the planned system, performed GIS mapping services, and participated in public meetings and workshops throughout the course of the project.

GRTA Comprehensive Operations Analysis, GA

Mrs. Maddox prepared and organized the ridecheck for GRTA's entire commuter bus system. She was responsible for over 100 temporary employees who were assigned a bus route to count passengers, record departure/arrival times, and collect surveys from riders. Mrs. Maddox developed an in-house mobile application to facilitate the ridecheck data collection so that the data could be easily post-processed. She also worked to plan and facilitate focus groups to address transit connectivity issues in major employment destinations in the Greater Atlanta area.

Orange County Thoroughfare Plan

Mrs. Maddox is the GIS analyst for this project and has utilized GIS modeling to calculate various performance measures for specific corridors throughout Orange County.

Regional Planning Commission of Greater Birmingham Transportation, Management, and Operations Plan, Birmingham, AL

Mrs. Maddox performed extensive spatial analysis through GIS, interviews with major stakeholders, a survey of minor stakeholders, analysis of the previous RTP, and best practices review.

Atlanta Regional Commission On-Call Services, GA

Mrs. Maddox served as a GIS analyst for various task orders from ARC. This included analysis of regional freight corridors and network designations. She also contributed to an analysis of transit project delivery within the region.

Kara Peach

Public Outreach Task Manager/Transit

Education

MA, Psychology of Sport and Physical Activity, University of Iowa, 2008

BS, Psychology, Indiana University, 2006

Affiliations/Memberships

Institute of Transportation Engineers, North Carolina Section, 2014

Kara is a Transportation Planner in VHB's Raleigh office. She has experience in a variety of transportation planning projects including master plans, long- and short-range transportation plans, and Title VI analyses. For these projects, she has provided data collection and technical analysis, technical writing, and extensive public engagement. With a background in public health, Kara specializes in integrating transportation and health.

Percent Time Available: 50%

City of Raleigh, Wooten Meadow Park Master Plan, Raleigh, NC

For the City of Raleigh Parks, Recreation and Cultural Resources Department, Kara is leading the community outreach for the Wooten Meadow Park Master Plan. The process includes interviews with stakeholders and adjacent homeowners, small group facilitation, development of outreach materials such as surveys and social media, and planning public meetings. The information collected through the ongoing community engagement process will be considered and integrated into the final Master Plan for the future redevelopment of the City Park.

FHWA/APA, Transportation and Health Tool

Prior to joining VHB, Kara worked on the project to develop a web-based tool to strengthen the connection between transportation and public health sectors. The target audience of the tool is transportation decision-makers at the state and regional levels. As Health and Transportation Planner, her responsibilities included the facilitation of an expert panel in the selection of evaluation criteria for selecting indicators and conducted and wrote a literature review of the 14 selected indicators for inclusion of the first iteration of the tool.

Capital Area Transit/Triangle Transit, Title VI Fare Equity Analysis, North Carolina

Prior to joining VHB, for the Title VI Fare Equity Analysis, Kara assisted in the analysis of proposed fare increases for Capital Area Transit (CAT) and Triangle Transit. This project included the development of new disproportionate and disparate impacts to Title VI populations for transit operators, a full analysis of potential impacts associated with the proposed fare increases, and proposed mitigation strategies to off-set the potential impacts. In addition, Kara led a comprehensive community outreach program, including transit stop canvassing and the development of rider surveys and informational handouts.

Capital Area Transit, Service Equity Analysis, Raleigh, NC

Prior to joining VHB, for Capital Area Transit (CAT), Kara conducted an analysis of proposed service changes to transit routes. Responsibilities as Transportation Planner included an analysis of demographics and potential disparate or disproportionate impacts of proposed route changes. Kara was the leader writer for the analysis.

North Carolina Strategic Highway Safety Plan (SHSP) Update

For the North Carolina Department of Transportation (NCDOT), Kara worked on a Strategic Highway Safety Plan that defined the state's overarching safety objectives, emphasis areas, and priorities, as well as metrics for tracking progress in improving safety by reducing the crashes that result in fatalities and serious injuries. The plan was developed by NCDOT in collaboration with safety partners across North Carolina. As Technical Writer, her responsibilities included facilitating in the compilation and finalization of the final draft and the development of final presentation materials.

Meg Bryson

Public Outreach

Education

BS, Fashion and Textile Management, North Carolina State University, 2015

Meg is a marketing assistant in VHB's Raleigh office. She has provided graphics assistance, as well as technical writing and review for a variety of projects, and has participated in public outreach efforts.

Percent Time Available: 50%

Downtown Parking Study, Wilson, NC

For the City of Wilson, Meg participated in stakeholder interviews to synthesize local perspectives. The downtown study area included 3,400 parking spaces across a 35 block area. VHB performed a comprehensive parking space inventory, and conducted a peak period occupancy analysis to determine the existing parking demand and raw surplus of availability.

Downtown Parking Study, Concord, NC

Meg assisted with data entry for this study to determine the existing parking utilization for downtown Concord. She also provided technical writing and review for the project.

North Carolina Strategic Highway Safety Plan (SHSP) Update

For the North Carolina Department of Transportation (NCDOT), Meg worked on a Strategic Highway Safety Plan that defined the state's overarching safety objectives, emphasis areas, and priorities, as well as metrics for tracking progress in improving safety by reducing the crashes that result in fatalities and serious injuries. The plan was developed by NCDOT in collaboration with safety partners across North Carolina. Her responsibilities included technical writing and review, facilitating the compilation and finalization of the final draft, and the development of final presentation materials.

Nat Grier, PE, ENV SP

Public Outreach: LEP Services Task Manager

Education

MS, Transportation, Massachusetts Institute of Technology, 2002

BS, Civil Engineering, Massachusetts Institute of Technology, 2000

Registrations

Professional Engineer NC, 2005

Professional Engineer MD, 2008

Professional Engineer VA, 2015

Professional Engineer IL, 2015

Envision™ Sustainability Professional, 2014

Affiliations/Memberships

Institute of Transportation Engineers

Transportation Research Board, TDM Committee, Friend of the Committee

Nat has extensive experience in a broad set of disciplines within the field of transportation. He specializes in campus transportation planning and has worked on campuses across the country. In addition to transit, bike and pedestrian planning, his multimodal work includes TOD, scenario analysis and small area planning. Nat has a strong background in the development of TDM plans as well as parking analysis and financial planning. He supports the sports design practice through his understanding of event and venue transportation planning. In addition to campus planning, Nat has experience with a wide array of public sector transportation planning projects including transit studies, CTP, LRTP development and traffic forecasting, as well as air quality modeling and emissions estimates.

Percent Time Available: 30%

West Franklin Street Redevelopment, Chapel Hill, NC

As Project Planner, Nat provided overall assistance and guidance for the redevelopment of a large mixed-use parcel in downtown Chapel Hill. The project is affiliated with the University, so it included a balance of objectives of the private developer, foundation, and University, all subject to the Town's vision for the development. Primary tasks included advising on shared parking requirements and survey instruments to identify current travel patterns.

Moravian College, Master Plan, Bethlehem, PA

Nat was Project Leader for the transportation aspects of the Campus Master Plan. The Plan includes a strong focus on connecting the three physically disparate campuses. The Plan also addresses parking needs at the University for both the short- and long-term, as many lots are expected to close or shift in response to campus building projects over the course of the Plan.

UNC-Chapel Hill, Craige Deck Expansion Transportation Facility Permit Application, Durham, NC

As Project Manager, Nat performed intersection and parking lot air quality modeling for the transportation facility permit application for the proposed parking garage expansion at the University of North Carolina at Chapel Hill. This work included the use of MOBILE6, PAL, and CAL3QHC modeling software.

University of Chicago, Parking and Traffic Demand Management Plan, Chicago, IL

Nat is Project Manager, overseeing the development of the plan to identify existing parking and travel needs on the campus and develop a ten-year plan to meet existing and future travel needs of the University and medical center populations. While the University is blessed with proximate connections to heavy rail and commuter rail, the weather, neighborhood concerns, and other local conditions currently constrain the travel choices of many of its employees and students. The plan includes a comprehensive analysis of the existing parking and shuttle systems and the adjacent street network. Working in concert with senior leadership at the University, the plan will identify measures to promote the use of non-auto travel while ensuring continued choice and mobility for all members of the campus community, paying particular attention to the needs of the medical center patients and visitors. As part of the final plan, an implementation schedule, including costs and key next steps, will be developed.

Washington State University, Master Plan, Pullman, WA

As Project Planner, Nat assisted on a wide range of tasks to support the transportation elements of the Master Plan. Work included input on a new road system and proposed shuttle system to support the campus expansion. Nat oversaw public participation efforts, including the development of a survey. A large focus included the evaluation of the current parking system and projections for future demands and potential means of providing sufficient supply.

Miller Cochran

Ordinance Review and Transit Task Manager

Education

MS, Transportation, University of North Carolina at Chapel Hill, 2010

BA, Political Science, Carleton College, 2004

Miller's focus is transportation planning with a particular emphasis on transit, transportation modeling, and the connections between transportation and land use. He brings a cross-disciplinary approach to transportation issues and seeks creative solutions to complex problems using rigorous technical analysis. He is motivated by a desire to improve communities and neighborhoods, enhance quality of life, and design high-quality transportation systems.

Percent Time Available: 50%

Parking Study, Burlington, NC

For the City of Burlington, Miller assisted with a parking inventory study of both private and public spaces in downtown Burlington. This involved correcting available space counts and determining parking utilization throughout the designated count day.

Transit Technology Feasibility Study, Raleigh, NC

As Project Planner, Miller will assist with this study designed to explore a variety of different transit technologies and corridors where their use may be feasible in the City of Raleigh. This process will involve identification of base conditions, development of alternatives, and evaluation of the alternatives. The evaluation will produce the potential service model for the corridors and downtown Raleigh including feasibility analysis; modal assignment by corridor; service and design standards; service and capital investment priorities; economic development opportunities; conceptual design; and cost estimates.

UNC-Chapel Hill, Park-and-Ride Study, Chapel Hill, NC

Miller was Project Planner for a study to assess the suitability of two sites for park-and-ride facilities to serve the University of North Carolina at Chapel Hill (UNC-CH). Because parking on the main campus is very limited, the University relies on park-and-ride for main campus commuters. As part of due diligence for the potential purchase of a property along a key access corridor to the campus, the University requested that VHB analyze the feasibility of both surface and parking structures on the two sites. Tasks included assessing existing transit service in the area, determining potential transit needs to the park-and ride lot, and forecasting the costs associated with expanded transit service.

Community Plan, Cary, NC

As Project Planner, Miller is assisting in developing the transportation element of the Cary Community Plan, a major update of the Town's comprehensive plan. The transportation element will be the update to the Town's Comprehensive Transportation Plan and will integrate seamlessly with the land use components of the Community Plan. It will address future transportation needs, including roadways, transit, bicycles and pedestrians, and will look at how the Town's transportation system and choices affect development of the Town's land, economy, infrastructure and environment. Miller assisted project team in implementing a comprehensive community and stakeholder outreach program to receive input from as many community members as possible over the course of the project. These public outreach efforts included a Summit for the Future that was the most well-attended public meeting in Cary history.

Wake Forest University, Area Bicycle, Pedestrian, and Transit Study, Winston-Salem, NC

As Project Planner, Miller will be part of a team analyzing bicycle, pedestrian, and transit options in and around the Wake Forest campus. The primary role will be in analyzing transit options in the area and transportation demand management (TDM) programs available to residents and workers at the University. Miller is part of a team conducting a 5 day charette on campus to better understand the needs of University faculty, staff, and students.

Tommy Pate, PE

Ordinance Review

Education

BS, Civil Engineering, North Carolina State University, 2005

Registrations

Professional Engineer NC, 2010

Affiliations/Memberships

Institute of Transportation Engineers

Tommy has been working in the transportation planning and engineering field for a decade, primarily responsible for performing capacity analysis for arterials, freeways, rural roads, signal systems, and isolated intersections, as well as preparing traffic signal plans, functional designs and preliminary roadway plans. Prior to joining VHB, he worked at the North Carolina Department of Transportation (NCDOT) in Congestion Management.

Percent Time Available: 40%

NCDOT Ordinance Review – Divisions 5 and 8, NC

For the North Carolina Department of Transportation (NCDOT), Tommy was Engineer for reviewing ordinances that were recommended for repeal by other contractors. The NCDOT's Traffic Engineering Accident Analysis System (TEAAS) and field visits were required to determine if the ordinance should be repealed, or re-written. Over 300 ordinances were reviewed across seven counties including Chatham, Franklin, Montgomery, Person, Richmond, Wake and Warren.

Downtown Parking Study, Burlington, NC

Tommy was Engineer for collecting detailed parking space inventory information, as well as vehicle accumulation and duration study for both private and public parking lots and on-street parking in order to determine the existing parking utilization.

Downtown Parking Study, Wilson, NC

Tommy was Engineer for collecting detailed parking space inventory information, as well as vehicle accumulation and duration study for both private and public parking lots and on-street parking in order to determine the existing parking utilization.

Shelton Station, Carrboro, NC

Tommy was Engineer for analyzing and recommending mitigations for a mixed-use development consisting of 114 mid-rise apartments and 12,000 square feet of neighborhood retail space.

Greensboro Coliseum Traffic and Parking Study, Greensboro, NC

Tommy was Engineer for observing traffic conditions at the Greensboro Coliseum during the first round (Friday) of the NCAA Men's Basketball Tournament (2012). Recommendations were made in order to mitigate deficiencies observed and anticipated needs in the future.

University Of North Carolina, Development Plan 2013 TIA, Chapel Hill, NC

Tommy was Engineer for analyzing 60 intersection across the University of North Carolina's Chapel Hill campus and recommending future mitigations in order to accommodate the University's future parking projections according to the University's Updated Master Plan.

Carolina Inn Master Plan, Chapel Hill, NC

Tommy was Engineer for reviewing a parking facility expansion, including site access and circulation, for the existing and proposed parking facility layouts at the Carolina Inn.

UNC-Chapel Hill, Carolina North, North-South Access Road and Greenway, Chapel Hill, NC

For the University of North Carolina (UNC) at Chapel Hill, Tommy was Roadway Design Engineer for the creation of MicroStation drawings of both the vertical and horizontal roadway alignments (existing and proposed) for a proposed road connecting Homestead Road to Municipal Drive in Chapel Hill. Cross-section cuts were taken at locations along the proposed roadway in order to determine the impacts of the proposed roadway. Additionally, drainage areas from two wetlands were determined and culverts with concrete headwalls were proposed.

Jody Lewis, PE, ENV SP

Bicycle/Pedestrian Task Manager

Jody has an extensive background in regional and metropolitan transportation planning, traffic operations, functional design, traffic impact analysis and data analysis. His extensive experience includes preparing traffic control plans, pedestrian management plans, and traffic signal plans and performing complex traffic flow, capacity, and planning analyses for arterials, freeways, rural roadways, signal systems, and isolated intersections. He has led projects providing traffic signal designs, traffic control plans, pedestrian management plans, pavement marking and signing plans, traffic impact studies, and corridor studies for public and private clients.

Education

BS, Civil Engineering (Transportation), North Carolina State University, 1993

Registrations

Professional Engineer (Civil Engineering) NC, 2002

Professional Engineer (Civil Engineering) VA, 1999

Envision™ Sustainability Professional (Sustainability) , 2013

Affiliations/Memberships

Institute of Transportation Engineers, North Carolina

Institute of Transportation Engineers

Percent Time Available: 50%

Oak-Poplar Traffic Study and Main Street Road Diet, Carrboro, NC

For the Town of Carrboro, as Project Manager, Jody led a study of traffic patterns in the Oak-Poplar neighborhood and prepared plans to remove vehicular travel lanes on West Main Street in Carrboro. The study included meeting with neighborhood residents; identifying street and intersection improvements to address the traffic circulation and safety concerns of the neighbors; and preparing conceptual pavement marking plans to reduce vehicular travel lanes and add bicycle lanes on West Main Street adjacent to the neighborhood.

Bicycle Pavement Marking Study, Raleigh, NC

For the City of Raleigh, as Project Manager, Jody is leading a project to select and design bicycle pavement markings for over 50 miles of streets in the City of Raleigh. Project tasks include public involvement, field data collection, assessment of streets and identification of recommended bicycle marking treatments, design of the recommended bicycle markings, and preparation of construction costs and contract documents. The types of treatments to be considered include sharrow markings and exclusive bicycle lanes.

UNC-Chapel Hill, Cobb-Joyner Parking Deck and Northeast Chiller Plant, Chapel Hill, NC

VHB was a member of the team to design a parking deck and water chiller plant on the University of North Carolina at Chapel Hill (UNC-CH) campus. As Project Manager, Jody provided traffic analyses, traffic control plans, pavement marking plans, and traffic signal plans in support of the project. Traffic control plans were developed for the construction of an electrical ductbank and chilled water lines on University, Town, and North Carolina Department of Transportation (NCDOT) roadways. Temporary and final signal upgrades plans were also developed to accommodate the utility construction and to provide improved traffic operations after the parking deck is opened for operation. Pavement marking plans were provided for the final upgrade of the roadways affected by the utility construction. Assistance was also provided throughout construction to provide the necessary coordination between contractors, the Town of Chapel Hill, and NCDOT.

UNC-Chapel Hill, Traffic Signal Designs and Timing Plans, Chapel Hill, NC

As Project Manager and Principal-in-Charge, Jody led VHB staff in the preparation of 25 traffic signal plans for 15 intersections on the campus of UNC-CH. Traffic signal plans have been prepared to design three new traffic signals, to incorporate upgrades to existing traffic signals, and in many cases to temporarily modify the traffic signal operations during the construction of utilities in the intersections. Typical signal upgrades have included new signal phasing, controller equipment upgrades, addition of pedestrian and bicycle amenities (new crosswalks with signals and pushbuttons, bicycle detection loops, etc.), and the provision of decorative poles and mast-arms.

UNC-Chapel Hill, Craige Parking Deck Expansion, Chapel Hill, NC

Jody is leading much of the firm's participation on a project to design the expansion of the Craige Parking Deck on the UNC-CH campus. The intent of the project is to add approximately 950 new parking spaces by expanding the deck vertically. Jody has led traffic capacity analyses and the development of traffic control and pedestrian management plans. In addition, air quality permit analyses are being performed by the firm for the purposes of submitting the appropriate air quality permit applications with the North Carolina Department of Air Quality.

Andrew Topp, PE, PTOE

Parking

Education

MS, Civil Engineering, North Carolina State University, 2004

BS, Civil Engineering, Virginia Polytechnic Institute and State, 1999

Registrations

Professional Engineer NC, 2003

Professional Engineer VA, 2014

Professional Engineer AR, 2013

Professional Traffic Operations Engineer, 2007

Affiliations/Memberships

Institute of Transportation Engineers

Institute of Transportation Engineers, North Carolina

Andrew has diversified traffic engineering and transportation planning experience that includes traffic capacity analyses, corridor planning, spot safety studies, highway noise studies, traffic impact analyses, traffic simulation modeling, forecasting, roadway functional designs, and campus transportation plans including planning of pedestrian, bicycle, transit and parking accommodations. His traffic engineering experience includes conducting various types of traffic analyses for arterial corridors, freeways, and intersections, as well as developing recommendations for improvements to enhance traffic flow. His campus and transportation planning experience involves developing context sensitive solutions that balance the needs of pedestrians, bicyclists and motorists.

Percent Time Available: 30%

300 East Main Street Traffic Impact Analysis, Carrboro, NC

Andrew was Project Manager for estimating the impacts of a 360,000-square-foot mixed-use development, which included phasing analysis, study of unconventional striping options along Main Street, application of transit/traffic demand management (TDM) capture rates, effects of multiple approved developments, and simulation presentations to the North Carolina Department of Transportation Congestion Management/Division and City staff.

Lowes Home Improvement Parking Study, Chesapeake, VA

Andrew was Project Manager for conducting a parking study for an existing Lowes Home Improvement store in Chesapeake. The study estimated the maximum parking demand and was submitted to the City to allow for a reduction in the number of spaces on site.

Cary Parkway and High House Road Intersection Improvements, Cary, NC

Andrew was Project Manager for the development of seven unique intersection alternatives, such as traditional widening, quadrant roadways, bowtie, and roundabouts. The second phase of the project included a detailed study of the three options preferred by Town Council. Conceptual design drawings, construction costs estimates, and detailed operational analyses including VISSIM animations were developed for these three options.

Cherry Lane Corridor Study, Alamance County, NC

Andrew was Project Engineer for the corridor study of Cherry Lane. His duties include traffic capacity analysis, safety analysis, environmental screening, and developing improvement alternatives, including implementation of a new interchange.

Hargett Street and Johnson Blvd, Jacksonville Road Diet, Jacksonville, NC

Andrew was Project Manager for final pavement marking and signing plans to convert a 6-lane facility to a 5-lane with bike lanes on Johnson Street and add bikes lanes to Hargett Street when the roads were resurfaced.

NCDOT, On-Call Statewide Traffic Count Program, North Carolina

Andrew was Project Manager for an on-call data collection project, which has been ongoing for the North Carolina Department of Transportation (NCDOT) since 2007. He has been responsible for scheduling traffic counters, downloading and condensing count data, sketching intersection in CAD, and writing report summaries. He has successfully conducted over 200 intersection turning movement and over 200 volume classification tube counts across the state.

Scott Himes, PhD

Public Outreach

Education

PhD, Civil Engineering, Pennsylvania State University, 2013

MS, Civil Engineering, Pennsylvania State University, 2007

BS, Civil Engineering, Pennsylvania State University, 2006

Affiliations/Memberships

Transportation Research Board, AFB10 - Geometric Design, Young Member, 2010

Transportation Research Board, AHB65 - Operational Effects of Geometrics, Friend, 2007

Scott is a Transportation Analyst with experience in safety research. As a safety researcher, he specializes in data collection, data analysis, safety evaluations, and crash data analysis. His expertise includes collection and analysis of data related to geometric design, operations, and highway safety. As an instructor, he has educated emerging professionals in transportation design, traffic design, Highway Safety Manual methodologies, and Highway Capacity Manual based field data collection methods.

Percent Time Available: 20%

Strategic Highway Research Program 2 S-07B: In-Vehicle Driving Behavior Field Study

Prior to joining VHB, served as a Research Assistant, supporting the installation and maintenance of data collection equipment in approximately 100 participant-owned vehicles. Also performed evaluations of the recruited participants upon entering the study.

FHWA, Development of Crash Modification Factors (DCMF) Project

For the Federal Highway Administration (FHWA), Scott is serving as a Research Engineer for developing crash modification factors for edgeline rumble stripes, red-light indicator lights, and intersection collision warning systems. Responsibilities include contacting states to coordinate data collection, identifying appropriate treatment and reference sites, and performing safety evaluations of countermeasures using a variety of statistical methods.

FHWA, Informational Report on Methods to Achieve Safe Speeds on Rural and Suburban Roadways

Prior to joining VHB, Scott collected and evaluated speed and encroachment data at sites that were treated with high-friction roadway surfaces for a project sponsored by the Federal Highway Administration (FHWA). Operating speed data were used to examine the margin of safety for friction supply and friction demand for high-friction surface treatment applications.

NCHRP 03-106: Traffic Control Device Guidelines for Curves

For the National Cooperative Highway Research Program, serving as a research engineer, the Scott identified potential improvements to the MUTCD guidelines for the application of traffic control devices on curves. His responsibilities included leading a multistate data collection effort of horizontal alignment, traffic signs, and crash history; developing safety performance functions; and estimating the effects of curve related traffic control devices on crash frequency and severity.

NCHRP 07-21: Asset Management Guidance for Traffic Control Devices, Barriers, and Lighting

For the National Cooperative Highway Research Program, Scott worked on a project to develop asset management guidance for selected categories of traffic and safety assets that are owned and maintained by an agency. Responsibilities included documenting issues related to the maintenance and management of assets; developing draft guidance for each of the assets; and completing case studies for best practices in asset management.

FHWA, Roadway Safety Data and Analysis Toolbox

Scott is serving as a technical expert for a Federal Highway Administration (FHWA) project to plan and design a web-based Roadway Safety Data and Analysis Toolbox. Responsibilities include identifying capabilities of existing tools, identifying safety data analysis needs, and developing a series of new tools that will reside in the toolbox.

Chris DeWitt, AICP

Ordinance Review/Bicycle/Pedestrian

Chris is a Senior Planner in VHB's Williamsburg, Virginia, office. His diverse work experience ranges from planning and design of bicycle and pedestrian facilities to public involvement and grant funding. He has worked with a variety of regional, state, and federal agencies, including the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the Virginia Department of Transportation. His local government experience adds a unique dimension to the VHB team. He is a member of the American Institute of Certified Planners and the American Planning Association.

Education

BS, City Planning, University of Virginia School of Architecture, 1991

Registrations

American Institute of Certified Planners, 1999

Affiliations/Memberships

American Planning Association

League of American Bicyclists

Rails-to-Trails Foundation

Association of Pedestrian and Bicycle Professionals

Percent Time Available: 10%

Duck Comprehensive Pedestrian Plan, Duck, NC

Chris is the Project Manager for the development of a Comprehensive Pedestrian Plan to support the pedestrian-first mobility goals included in the Town's recently adopted 2022 Vision. In addition to supporting multimodal, complete streets, and green community goals, the Pedestrian Plan will comply with the North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative, which is providing funding for the project. The plan will address infrastructure needs, policy recommendations, and outreach and education programs. The planning process included Steering Committee deliberations as well as public meetings, all of which were facilitated by Chris.

James City County Parks and Recreation Master Plan, James City County, VA

Chris assisted with the development of a Master Plan for "signature parks" in James City County (JCC) with three major components: Chickahominy Riverfront Park, Jamestown Beach Campground, and Jamestown Yacht Basin. He facilitated the public involvement process and contributed to concept planning throughout the duration of this project.

James Madison University, Bicycle/Pedestrian Master Plan, Harrisonburg, VA

Chris is serving as the Project Manager to prepare a bicycle/pedestrian master plan for the James Madison University (JMU) campus to help the university realize the maximum potential benefits of an interconnected multi-modal transportation system. The plan will address connections within the JMU campus and also connections to the City of Harrisonburg. The master plan will result in a phased system of improvements along with an implementation plan and recommendations for funding.

Maple Park Master Plan, Currituck County, NC

Chris was Project Manager for an effort to provide conceptual design for relocation and expansion of Maple Park. The project involved coordination of the planning process with existing adjacent facilities as well as ongoing adjacent engineering projects. Chris facilitated a public charrette meeting to help reach consensus on a preferred alternative. After the Master Plan was complete, the County prepared to proceed into design.

Belmont to Ferry Farm Trail, Stafford County, VA

Chris was Project Manager for this Transportation Equity Act for the 21st Century (TEA-21)-funded Enhancement Project to develop two trail sections for bicycles and pedestrians that traversed sensitive archaeological and riparian areas, linking the historic Belmont Estate to George Washington's boyhood home at Ferry Farm. Both sites were located on the Rappahannock River in Stafford County, and the trails generally follow the river's floodplain. Key issues included public involvement, stakeholder and property owner coordination, consensus building, conceptual plan development, environmental constraints, and regulatory agency and Virginia Department of Transportation (VDOT) coordination. Phase One, which included sidewalk and streetscape improvements in the historic village of Falmouth, has been constructed.

Bill DeSantis, PE

Bicycle/Pedestrian

Education

BS, Civil Engineering, Northeastern University, 1976

Registrations

Professional Engineer RI, 1983

Licensed Construction Supervisor MA, 1990

League Cycling Instructor, 2004

National Mountain Bike Patrol Certified Instructor

Affiliations/Memberships

East Coast Greenway Alliance, Member

League of American Bicyclists, Member Instructor, 2006

National Committee on Uniform Traffic Control Devices, Bicycle Technical Committee, Technical Member, 2009

Association of Pedestrian and Bicycle Professionals

National Mountain Bike Patrol, Patrol Instructor, 2010

Institute of Transportation Engineers, New England, 2012

Highly experienced in bikeway and roadway design, Bill has overall technical responsibility for safety improvement projects ranging from local bicycle and pedestrian trails to large limited access highways. His involvement includes responsibility for conceptual and final design of geometric realignments, drainage improvements, and earthwork calculations, as well as for the preparation of right-of-way plans and plats, cost estimates, and contract drawings. He is also the corporate leader of VHB's Bicycle/Pedestrian and Transportation Enhancement practice. As technical advisor on numerous bicycle/pedestrian and enhancement projects in the eastern United States, he has an active role in the planning, design and construction of bicycle facilities in eleven states. Bill is a technical member of the NCUTCD Bicycle Technical Committee, a member of the League of American Bicyclists, a League Cycling Instructor, a National Mountain Bike Patrol Instructor, a member of the Blackstone River Bikeway Patrol, and a bicycle commuter.

Percent Time Available: 10%

James Madison University, Bike / Pedestrian Master Plan, Harrisonburg, VA

Bill is preparing a bike/ped master plan for the James Madison University (JMU) campus to help JMU realize the maximum potential benefits of an interconnected system within JMU campus connections.

Mattapoisett Multi-Use Bicycle Path, Mattapoisett, MA

For the town of Mattapoisett, on Buzzards Bay in southeastern Massachusetts, Bill was Project Manager for the final design and construction of a 4.7-mile multi-use bicycle trail on a former railroad bed. The majority of the bicycle path is an off-road paved bicycle path (Class I) on former railroad bed, with an adjacent equestrian trail. Portions of the railroad right-of-way serve as a sewer line corridor, which required careful design. The project was phased due to permitting issues regarding building a bike path along a barrier beach, crossing a salt marsh, and coordinating the design with a YMCA camp. This project, which was part of the Southeast Regional Planning & Economic Development District regional bike master plan, aimed at promoting safer bicycle travel as well as access to several town facilities and links to adjacent paths. Construction was completed in fall 2008.

NPS, Integrated Bicycle Plan Feasibility Study, Cape Cod National Seashore, Province Lands, MA

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

Providence Bike Network On-Road Bicycle Plan, Providence, RI

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

Dan Nabors, PE

Bicycle/Pedestrian

Dan is a Senior Transportation Engineer and is VHB's lead for field safety reviews. With diversified transportation engineering experience that encompasses traffic operations, roadway design, downtown revitalization projects, and safety, he has worked on projects focusing on engineering and planning studies to integrate pedestrians, bicyclists, vehicles and transit. Dan's projects have ranged from creating downtown revitalization plans to conducting pedestrian and bicycle safety studies aimed at improving facilities at specific locations. He has supported FHWA's pedestrian and bicycle safety program for close to a decade.

Education

MS, Civil Engineering, Kansas State University, 1998

BS, Civil Engineering, Virginia Polytechnic Institute and State University, 1989

Registrations

Professional Engineer (Civil Engineering) VA, 2004

Affiliations/Memberships

Institute of Transportation Engineers

Association of Pedestrian and Bicycle Officials

Percent Time Available: 10%

Duck Road Safety Audit and Comprehensive Pedestrian Plan, Duck, NC

For the Town of Duck, Dan led a pedestrian and bicycle study that involved various stakeholders throughout the community to assess the issues and needs. He also presented results to community and key public officials, and many of those improvements have been implemented. He is currently developing a Comprehensive Pedestrian Plan. As part of the data collection phase of the project, VHB developed a public input survey, which the Town used in an on line survey tool to receive over 600 responses. He developed a data collection plan to define pedestrian and bicycle demand and behaviors by age category. The plan will address infrastructure needs, policy recommendations, and outreach and education programs.

FHWA, On-Call Safety Technical Support

Dan is Co-Principal Investigator (PI) for a contract that provides engineering support, outreach and communications support, and training support to FHWA's Office of Safety. As the contract PI, he is responsible for the overall technical direction and quality control of task orders that

FHWA, Safety Circuit Rider Programs Best Practices Guide Development

Dan was Principal Investigator (PI) for a Federal Highway Administration's (FHWA) study to provide state departments of transportation and Local Technical Assistance Program/Tribal Technical Assistance Program centers with an easy-to-use resource for implementing or enhancing a Safety Circuit Rider (SCR) program. He investigated common characteristics of existing SCR programs, information on the typical duties and services provided by SCR programs, lessons learned by existing programs, and evidence of the effectiveness of SCR programs through conferences, webinars, and other communication methods.

FHWA, Pedestrian and Bicycle Safety Program

Dan served as Project Manager and Lead Safety Researcher, providing on-site technical support to the Federal Highway Administration's (FHWA) Office of Safety Pedestrian and Bicycle Safety Program. He reviewed and critiqued pedestrian-related technical reports and provided technical assistance to agencies with pedestrian safety problems. Dan provided technical assistance on a deployment and evaluation of over 26 different pedestrian/bicycle countermeasures in three major cities in the United States (Las Vegas, San Francisco, and Miami). He assisted in the development of data collection plans to evaluate both driver and pedestrian behaviors at study locations and identified various countermeasures for deployment ranging from automatic detection of pedestrians using video systems to pedestrian knockdown signs. He also coordinated the development of BIKESAFE, the first bicycle safety expert system software. Dan conducted training and numerous pedestrian and bicycle RSAs in over a dozen states, many of which were focused on transit in schools in CA, FL, AZ, NM, WV, and AL. Training included courses covering pedestrian planning, design, and safety. Topics covered during the course include roundabouts, road diets, and other specialized treatments. Working with cities on integrating complete streets concepts. As consultant manager for FHWA's Pedestrian Focus City and State Program, he helped organize and conduct a peer exchange for all member states.

3 Project Approach

3

Project Approach

Project Management Strategy

VHB has the in-house capabilities to provide all the required services to prepare a parking study for the Town of Carrboro. Our project team consists of of transportation planners and engineers with expertise in parking, bicycle and pedestrian improvements, transit operations, and community involvement.

The VHB Team will be led by staff from the Raleigh (NC) office, with support from Providence (RI), Tysons Corner (VA), and Williamsburg (VA) offices. VHB views its staff as urban problem solvers, and this approach aligns very well with the multimodal approach outlined by the Town's RFP. We understand that this is not simply a parking study, because balancing future parking supply and demand is directly related to travel demand management (TDM) strategies for all modes of transportation.

VHB's local knowledge and experience will be an invaluable asset on this project; our office has over 15 years of project experience (while operating previously as M/A/B Transportation) with the Town of Carrboro, Town of Chapel Hill, and the University of North Carolina at Chapel Hill.

Staff Roles

Bill Martin, PE, will serve as Principal-in-Charge for this project, bringing more than 35 years of transportation engineering and project experience. **Timothy Tresohlavy, AICP, GISP,** will serve as the Project Manager for VHB, handling the day-to-day coordination with Town Staff and organizing VHB's team. Timothy's parking planning experience dates back to 2006, when he served as the Parking Planner with the NC State University Transportation Department in Raleigh (NC).

Bill and Timothy have worked collaboratively on numerous transportation planning projects since 2008, including downtown parking studies for Raleigh, Burlington, Wilson, and Concord in North Carolina. Bill will provide technical oversight, while Timothy provides expertise in planning, outreach, and visualization of data.

Steve Epley, PE, will serve as the coordinator of field data collection inventories. Steve has 17 years of engineering experience collecting traffic, parking, bicycle, and pedestrian count data and synthesizing the results using a combination of software. Steve currently serves a similar role for the biannual traffic impact analysis (TIA) performed for the UNC-CH campus, as well as numerous other TIA projects for individual building or parking garage developments on campus.

Jody Lewis, PE, is a professional engineer and project manager with 22 years of experience. Jody has previous work experience with the Town of Carrboro on the Main Street road diet project, which added bicycle lane pavement markings and intersection improvements. Jody also has extensive work experience with the Town of Chapel Hill and UNC-CH on several development and transportation projects.

Dan Nabors, PE, is a well-rounded transportation engineer with 23 years of experience, with specialization experience in pedestrian improvements. Dan has authored numerous reports and guidance for FHWA's pedestrian and bicycle safety programs and roadway safety audits, in collaboration with Bill DeSantis.

Bill DeSantis, PE, serving as VHB's Corporate Bicycle Practice leader, brings 39 years of bicycle engineering experience to the VHB Team. Bill is an experienced bicycle commuter and a certified League Cycling Instructor (LCI), among several other notable accomplishments. Bill will contribute directly to any bicycle components and recommendations.

Scott Himes, PhD is a transportation analyst and PhD in the field of Civil Engineering. Scott specializes in the quantitative analysis of datasets, particularly crash data for the FHWA. Scott will provide assistance designing the residential survey instrument and analyzing the results for statistical significance.

Proposed Methodology for Tasks

1. Public Participation

Subtask 1.1. Public participation strategy

Task Objective: To prepare, with the guidance of the Town staff, an outline of various methods to engage Carrboro citizens in discussions of downtown parking challenges.

Methodology: VHB will gather the unique perspectives of those who live, work, and enjoy Carrboro directly from those who experience the challenges daily. The public outreach strategies will include public meetings, social media, and a residential survey. Additional public participation strategies as recommended by the Town will be considered as potential add-on tasks, for an additional fee to be negotiated.

Meeting notices and general promotion of the event will be performed by Town staff. The public participation strategy will be used as a guide; additionally, successful strategies from previous planning efforts within Carrboro are equally valuable resources that should be considered.

Deliverables: Technical memorandum outlining strategies for involving the public in a variety of media and project events.

Subtask 1.2. Kickoff meeting/Public Forum

Task Objective: To discuss the goals and objectives of the study with interested citizens of Carrboro and gauge interest and perspectives.

Methodology: VHB will work with the Town to schedule the most appropriate time and location for an initial public meeting. The purpose of the kickoff meeting will be to establish the overall vision, goals, and objectives of this parking study; present several best management practices from the parking industry to the public; and solicit feedback on the unique challenges that the citizens have observed. VHB will compile written and verbal comments from the kickoff meeting and include these in an appendix for the final report.

VHB will coordinate with the Town to identify an appropriate venue for this meeting that will provide the necessary equipment and space.

Public feedback or recommendations that would require VHB to collect additional data or perform analysis that would be beyond the original scope of work will be identified and discussed with the Town. A determination will be made by the Town as to its added value to the project, and whether VHB should perform this additional work for an additional fee.

Deliverables: Technical memorandum documenting the general themes of discussion from public input.

Subtask 1.3. Social media and outreach

Task Objective: To reach citizens of Carrboro who may not be available to attend public meetings, and allow their perspectives to be accounted for in the planning process.

Methodology: In addition to attendance at public meetings, VHB's public outreach will utilize the Engage Carrboro tool to publicize upcoming plan milestones, solicit feedback prior to and following public meetings, and gauge citizen perspectives on potential parking strategies. VHB understands that 14% of Carrboro residents identify themselves as Hispanic or Latino according to Census data, which is four (4) percent higher than the County and State averages. An estimated 7.6% of adults have identified themselves as speaking English less than very well (LEP status). VHB will work with the Town to ensure that outreach efforts and materials are made available to these LEP individuals and anticipates the use of Spanish-language print and web materials and a public meeting interpreter.

VHB understands that not all social media feedback will be constructive, particularly when dealing with a controversial topic such as parking management. VHB will rely on the Town to review content regularly and remove any that is inappropriate, inflammatory, or not constructive to the project.

Deliverables: Summary of general themes and topics received during the project, included as public outreach initiatives within the report appendix.

Subtask 1.4. Resident/visitor parking survey

Task Objective: To collect residents' perceptions of, and attitudes towards, accessing destinations and parking in Carrboro.

Methodology: Public opinion and travel surveys can vary widely in scope, scale, and statistical validity. In order to develop a statistically valid survey that reflects the attitudes and behavior within an acceptable level of confidence and range of error, information on the total population or universe that is being surveyed must be known, and the survey must be a random survey of members of the population. The RFP requests a survey of residents spread throughout the town, and in particular, residents who live further away from downtown and with limited access to transit. At a minimum, this would require a stratified sample of residents with a valid number of responses from locations that are near and far from downtown, and those that have access to transit and those that do not. The challenge is to first stratify the population in these categories and then to obtain a statistically valid number of responses in each category. The number of responses by category required is based on the desired level of precision and confidence for the results. The ratio of responses to the population is used to expand the survey to represent the population as a whole with an acceptable level of confidence and error.

Survey responses are typically collected through either a direct interview with the respondent (either in person or by telephone) or by the use of a self-enumerated survey form. Either of these methods can be costly and time consuming. In recent years, online survey tools such as Survey Monkey have been used to collect the data, allowing for quick analysis of the results. Again, to be statistically valid, the respondents must either be directly recruited to participate in the survey through a random selection process, or a sufficiently large number of responses must be received for each survey category—in this case, location and access to transit.

Based on the above discussion, VHB is proposing a simplified survey method that, while not statistically valid, will be designed to best attain a full cross section of the Carrboro population. VHB proposes to administer the survey through an online survey tool such as Survey Monkey, which is available in 13 languages. A link to the survey will be published on the Town of Carrboro's website, as well as in local newspapers, and will be distributed to residents through existing town mailings, such as the monthly water bill. The following steps will be taken to produce the survey results:

- Design the survey questionnaire
- Create the link to the survey on the Town's website
- Advertise the availability of the survey to residents
- Provide a period of time for survey response
- Analyze survey responses (with particular focus on resident's geographic location within Carrboro)
- Document results

VHB will develop the survey questionnaire in coordination with the Town of Carrboro. Once the survey is finalized, VHB will post the survey on the internet for responses and provide the Town with a link that can be advertised. The Town of Carrboro will put the link on the Town's website and advertise the availability of the survey in local publications. The Town will also take the lead on distributing the link through other regular mailings to the residents, such as the monthly water/utility bills. After a period of time, VHB will analyze the survey results and document in a technical memorandum.

Deliverables: Survey questionnaire and technical memorandum documenting survey results.

Subtask 1.5. Draft plan open house

Task Objective: To present initial findings and host a discussion with the public relating to existing conditions data and preliminary findings.

Methodology: After several months of data collection and analysis, VHB and the Town will host a second public meeting to present preliminary findings and recommendations for comment. This open house event will include the existing conditions assessment, estimates of future parking demand, and several preliminary strategies that would benefit the parking system while taking bicycle, pedestrian, and transit modes into account.

VHB will make a brief presentation to open the meeting, followed by an open forum discussion with citizens for the remainder of the meeting. Citizens will be presented with opportunities for comment and display board markup. VHB will provide two (2) printed draft plans (not including appendix sections) for public review and comment during the open house.

VHB will coordinate with the Town to identify an appropriate venue for this meeting.

Citizen feedback from the meeting, along with responses from the Engage Carrboro website, will allow VHB to shape preliminary recommendations into the final plan recommendation strategies.

Deliverables: Summary of general themes and topics discussed at the open house, included within the report appendix.

2. Data Collection

Subtask 2.1. Data collection strategy

Task Objective: To perform field data collection of all public and private parking lots within the defined downtown study area.

Methodology: The collection process will employ the use of GIS mapping of existing parking facilities overlaid onto aerial images. The collection sheets will include a map of parking lot locations with an identification number (code), as well as estimated number of parking spaces (by type) anticipated.

VHB will utilize existing GIS resources and construct a GeoDatabase to store the geographic shape of parking lots with corresponding lot identification numbers that join with parking inventory spreadsheets (Excel format). Each parking lot will be inventoried individually and aggregated to the Town's three (3) parking analysis zones identified by the 2008 parking study. Zone A is primarily the parking areas west of Oak Street. Zone B represents the central zone, and is further subdivided into three (3) segments. Zone C is primarily south of Main/Rosemary Street and east of the railroad tracks.

Deliverables: Data collection effort, designed by VHB, that resembles the 2008 study to allow for comparisons and analysis of trends over the previous seven (7) years.

Subtask 2.2. Parking space inventory

Task Objective: To obtain an accurate record of the existing parking supply within the downtown study area, and use this for further analysis.

Methodology: VHB will perform an audit of the existing parking space inventory, provided by the Town, indicating parking lot characteristics related to:

- Lot ownership (public, private)
- Maintenance condition (paved, gravel, striped, wheel stop)
- Time restrictions (30-min, 1-hour, 2-hour, 24-hr)
- Assumed user group (government employee, private employee, customer)
- Weekday parking spaces (unreserved, restricted, ADA, loading)
- Weekend parking spaces (unreserved, restricted, ADA, loading)

Deliverables: An updated spreadsheet database, with ability to join with GIS datasets for visualization.

Subtask 2.3. Parking utilization surveys

Task Objective: To observe and record the number of vehicles parking within the study area during a typical weekday and a typical weekend day.

Methodology: Upon completion of the parking space audit, VHB will perform four (4) peak period occupancy counts for one (1) typical weekday (assumed to be Tuesday), as well as two (2) peak period occupancy counts for one (1) typical weekend (assumed to be a Farmers Market Saturday). These days and times correspond with findings from the Town's 2008 parking study, so that direct comparisons can be made. All public and private parking lots within the downtown study area will be included in the parking utilization inventory.

- Weekday Counts: Tuesday
  - 9-11 am
  - 1-3 pm
  - 3-6 pm
  - 6-9 pm
- Weekend Counts: Saturday
  - 1-3 pm
  - 6-9 pm

VHB has previously collected parking occupancy data on non-peak weekdays and weekends and found that these additional data points offered little value to the project, its goals and objectives, and the final recommendations.

VHB will not perform vehicle (tube) counts entering or exiting public parking lots. These type of traffic counts were necessary for the Town's 2008 parking study, although equipment malfunctions rendered their data less than useful to the project.

Deliverables: An updated spreadsheet database of parking utilization during the peak period.

Subtask 2.4. Length-of-stay analysis (turnover study)

Task Objective: To observe and record the number of vehicles within public parking areas that are parked for longer than the specified 2-hour parking limit.

Methodology: All Town parking lots are posted as 2-hour time restricted parking between the hours of 7:00 am and 5:30 pm. Under current parking enforcement conditions, vehicles are legally allowed to relocate within the 2-hour time frame within any of the public lots. Symptoms of an on-street parking 'shuffle' occurring every 2-hours are not presumed to be an issue in downtown Carrboro, due to the limited number of on-street parking spaces.

VHB will collect length-of-stay data within the nine (9) Town of Carrboro public parking lots on one (1) typical weekday (assumed to be Tuesday). This analysis will occur separately from the parking occupancy field data collection and utilize a separate field crew. VHB will utilize vehicle tire chalking on an hourly cycle to identify the number of vehicles that were observed between one and 10 occasions. This methodology will yield the necessary data as outlined by the parking plan RFP, and is consistent with the Town's 2008 parking study. This approach is limited because it will not account for vehicles that re-park within the same parking lot or within other parking lots throughout the day. For this type of data analysis, vehicle license plates will need to be recorded.

Should the Town require additional information from this analysis, such as number of vehicles re-parking within multiple public parking lots, VHB can offer different data collection methods to record vehicle license plate information. This revised methodology will require additional staff personnel and equipment, and would therefore be offered for an additional fee. The value added to the project would be the identification of vehicles that park (and re-park) within multiple public parking lots throughout the day, presumably to avoid a parking citation for surpassing the 2-hour time restriction.

Deliverables: Spreadsheets and charts to display the length of stay data for vehicles parking within public parking lots.

Subtask 2.5. Loading zone utilization

Task Objective: To observe and record the number of delivery vehicles parking within the specified loading zones within the downtown study area.

Methodology: VHB will include loading zone utilization within the parking utilization data collection effort, as there are very few designated loading zones within the study area.

Deliverables: An updated spreadsheet database of parking utilization during the peak period.

3. Analysis

Subtask 3.1. Future parking demand

Task Objective: To construct a flexible spreadsheet-based model to estimate future parking demand based on multiple dynamic inputs and assumptions identified by the Town.

Methodology: VHB will rely on the Town to assemble and provide detailed descriptions of future development projects that are expected within a five (5) year period. Project descriptions shall include the physical address, owner(s), project title(s), current and expected building land use (per Article XVIII of the Carrboro Land Use Ordinance), estimated GSF of the building per floor, and other relevant information that would impact trip generation and parking demand. Relying upon these data, VHB will create a spreadsheet model that forecasts future parking demand generated by new land uses, as well as demand reduction factors related to travel demand management (TDM) best practices. Reduction factors may include expected travel mode share shifts and estimates for zero car household populations within Carrboro.

The inputs for the model will be easily updated as future assumptions and information are received, so that Town staff is able to regularly update and forecast additional development scenarios as they evolve over time.

VHB will rely on the Town to ensure that all development projects are identified, appropriately named, and located within their corresponding parking analysis zone within downtown.

Deliverables: Spreadsheet model of development projects, model input assumptions, and expected future parking demand summarized by project, and by the three (3) parking analysis zones identified by the Town's 2008 study. Potential parking spillover per zone will be approximated based on the parking supply-demand balance, however, accurately predicting human behavior regarding parking spillover options is not always possible.

Subtask 3.2. Parking supply, management, and enforcement recommendations

Task Objective: To provide various recommendations and parking management strategies based on project vision, goals, objectives, and synthesized public feedback.

Methodology: VHB will separate improvements into one of four (4) categories.

- Parking supply improvements: VHB will make recommendations based on field observations, professional judgement, public comments and discussion, and parking industry best practices. Recommendations will be planning-level improvements to existing parking lots and capacity estimates for future parking lot location(s).
- Education/Encouragement: VHB will complement physical improvement recommendations with programmatic recommendations that limit potential barriers to walking, biking, or riding transit.
- Enforcement: VHB will review the Town's current parking enforcement process, discuss procedures with enforcement officers, and provide suggestions of parking industry best

practices that would complement the project vision, goals, and objectives for parking management.

- Evaluation: VHB will review the Town's ordinance relating to land uses and parking requirements as outlined below.

VHB will provide electronic copies of all field data collection resources so that continual and regular updates to the parking inventory, utilization, and future parking model are possible.

VHB will not provide engineering-level parking lot paving and restriping plans, or traffic engineering improvements relating to entry/exit points, intersection sight distances, or other traffic and or safety improvements.

VHB will not provide direct responses to individual public comments, but rather synthesize common themes and allow perspectives to shape the final recommendations and strategies.

Deliverables: Final report sections, with appendix references for additional information.

Subtask 3.3. Land Use Ordinance parking requirement review

Task Objective: To review and make recommendations regarding the current parking requirements in Article XVIII of the Carrboro Land Use Ordinance in the context of the parking data collected in this project.

Methodology: In Section 15-291 of the land use ordinance, there are approximately 75 discrete categories of parking requirements, each linked to one of the 34 permissible land uses (and multiple sub categories of each major land use) in the Town. While the RFP states that a "comprehensive review of parking requirements" contained in the ordinance is to be conducted, it is not possible to review each individual parking requirement for the permissible land uses using the data that will be collected only for the focused downtown area that is defined in the RFP. It is possible, however, to compare the existing parking demands in the focused downtown area with the requirements contained in the ordinance, provided that a current inventory of the land uses that matches the permissible land uses as defined in the ordinance is available. This analysis must be done at an aggregate level, rather than for each individual land use type. This is due to the use of shared parking facilities in many of the downtown areas, particularly in the nine (9) public parking facilities in the downtown.

VHB will compare the observed parking supply and demands in the study area with the required parking derived from the inventory of land uses and the associated parking requirements as contained in Section 15-292 of the Town's Land Use Ordinance. Where parking

is specifically dedicated to a single land use (a bank for example), a comparison at that specific land use type is possible. Otherwise, the analysis will be done at an aggregate level for the study area. Since the study area is primarily centered on the downtown area of Carrboro, conclusions can be drawn as to the differences between parking demand in the downtown area versus non-downtown locations. Similarly, as the primary concentration of the transit service is to and within the downtown area, conclusions can also be drawn as to the impact transit has on the parking requirements.

It is interesting to note that in Section 15-297 of the ordinance, the use of joint parking spaces is accommodated. However, the joint use, as defined in the ordinance, is directed at joint use of spaces over different times of day. It is possible that joint use of a parking space could also be during the same time of day where a trip maker may park once but patronize multiple land uses by walking. This is very common in downtown business districts.

Deliverables: Technical memorandum documenting the analysis of parking requirements.

Subtask 3.4. Walkability micro-audit

Task Objective: To conduct a walkability micro-audit in the downtown and make recommendations for improving the safety, comfort, aesthetic quality, and accessibility for persons with disabilities in the vicinity of existing parking lots and parking deck.

Methodology: The term “audit” typically means a very systematic and independent methodology for evaluating either the effectiveness or the performance of the duties of organizations or facilities. In the case of a walkability audit, an audit would mean the systematic review and evaluation of the existing walk connections between origin and destinations using multiple measures of effectiveness. Many of these measures can be quantitative, such as the width of the sidewalk, linear feet of paved sidewalks, number of ADA approved accommodations, lighting, and the change in elevation (slopes or steps). Others may be qualitative, such as aesthetics and comfort. In this project, the focus will be on the common connections between the existing parking lots and deck and the destinations served.

Prior to the actual field walk of the downtown, VHB will prepare summary maps of the routes to be walked and a list of factors that will be considered in the field observation phase. Notes will be made by the participants in the field walk as related to each factor. VHB will compile the notes from the participants and summarize the results, identify problem areas, and make general recommendations as to improvements. Given the anticipated level of effort for this task, VHB will not be making a full engineering audit of the walk network in the downtown and will not be conducting an audit to evaluate if the walk network meets adopted safety guidelines, particularly where the walk routes cross existing streets.

VHB anticipates no more than five (5) individuals will participate on this field walk, to ensure the best use of time and effort.

Deliverables: Scanned copies of field notes and reference maps used during field visit, summary of recommendations with a technical memorandum containing a table of identified issues.

Subtask 3.5. Park-and-ride analysis

Task Objective: To identify potential park-and-ride markets and locations.

Methodology: Transit service in Carrboro is currently provided by Chapel Hill Transit with a total of three routes (F, CW, and J) serving downtown Carrboro each weekday and one route on Saturdays (CW). There are two park-and-ride lots located on the west side of Carrboro at Carrboro Plaza and Jones Ferry Road. While there may be some usage of these park-and-ride lots for trips going to downtown Carrboro, the primary market for these lots is the UNC campus and medical center. Potential park-and-ride locations along the existing bus routes will be explored and identified.

VHB anticipates that the market for substantial park-and-ride demand to downtown Carrboro is likely to be small, and that any potential park-and-ride locations would likely be existing parking supply that is underutilized and can be shared for park-and-ride service. VHB will identify both stand-alone and shared parking locations.

Deliverables: Technical memorandum.

Subtask 3.6. Bike parking recommendations

Task Objective: To prepare recommendations on where bike parking may need to be enhanced in the downtown.

Methodology: Perhaps one of the best methods for identifying locations where bicycle parking is needed is to observe where bicycles are currently being parked in informal locations. Much like looking at worn footpaths in unpaved areas to see where people want to walk, locations where bicycles are being chained to parking meters, trees, fences, lamp posts, benches, or any other fixed objects is a good indicator as to where more formal bike parking facilities should be placed. One problem with placing bicycle racks along the sidewalk is that this introduces both a conflict and competition for space with the pedestrians. One solution to this that many urban areas are beginning to use is the removal of an on-street parking space to create a bike corral. One such example is already in place along Weaver Street.

In this project, there will be several opportunities to identify locations where bicycles are being parked informally. The first opportunity is during the actual inventory and survey of existing parking facilities. During this task, the VHB field personnel will observe were bicycles are being parked and document these locations. The second opportunity is during the field walk of the walkability micro-audit task. The participants will be asked to observe and mark on the field maps and notes where bicycles are being parked.

Using the field observations of informal bicycle parking, VHB will identify locations for short term bicycle parking facilities. For long term bicycle parking opportunities, VHB will review the Comprehensive Bicycle Transportation Plan and the projected growth in downtown Carrboro as contained in the Town's comprehensive plans.

Deliverables: Scanned copies of field notes indicating existing bicycle parking locations, summary of recommendations for near- and long-term bicycle parking facilities.

4. Presentations

Subtask 4.1. Board of Aldermen presentations

Task Objective: To inform the Town Board of the project findings, schedule, and milestones.

Methodology: VHB will present preliminary findings to the Town Board of Aldermen prior to the draft plan open house meeting. This initial presentation will include existing conditions data, future demand estimates, and preliminary management strategies under consideration.

After further revision to the plan and recommendations following citizen feedback, VHB will make a second presentation to the Board with the final parking study findings and recommendations.

Deliverables: PowerPoint presentation relating to the project status and findings to date. VHB will make revisions to the project report as needed based on discussions with the Town Board.

Subtask 4.2. Advisory board presentation

Task Objectives: To inform and discuss potential implications of the parking plan with members of the Town's technical staff.

Methodology: VHB will work with the Town to present relevant findings of the plan to a select group of staff that are directly involved in development review and planning.

Feedback or recommendations that would require VHB to collect additional data or perform analysis that would be beyond the original scope of work will be identified and discussed with the Town. A determination will be made by the Town as to its added value to the project, and whether VHB should perform this additional work.

Deliverables: Draft parking plan to be circulated prior to the meeting, PowerPoint presentation documenting study findings. VHB will make revisions to the draft parking plan based on discussions.

5. Plan Development

Subtask 5.1. Parking Plan Report

Task Objective: To document the entire planning process, public outreach, comments, findings, and analyses within a full-color report, with appendices and summary recommendations.

Methodology: VHB will prepare a draft plan that builds upon public outreach, steering committee guidance and discussion, and data collection and analysis.

The draft plan will be circulated for review to the Town staff (steering committee), as well as be made available for public comment and review for the Board of Alderman and Advisory Board. The Town will assist VHB with compiling and synthesizing review comments to avoid conflicting requests. The review period shall not exceed two (2) weeks in order to maintain the project schedule. Review comments that would require additional data collection or analysis beyond the original scope of work will be identified and discussed with the Town.

VHB will make necessary revisions to the final plan and submit a final plan to the Town for adoption.

Deliverables: Final report with Appendix.

6. Staff Meetings/Coordination

Subtask 6.1 Bi-weekly plan update calls

Task Objective: To maintain project status and facilitate information sharing with the Town.

Methodology: VHB will host regular teleconference meetings with screen sharing capabilities to discuss project status and milestones, as well as upcoming tasks. VHB will send calendar invitations with directions to Skype for Business access to enable screen sharing.

The Town will provide a list of steering committee member invitees and email addresses to be included in these plan update calls.

Deliverables: Virtual meetings hosted by VHB, summaries of action items with collaboration from Town staff.

Subtask 6.2 General coordination and contract management

Task Objective: To maintain project progress and regular invoicing.

Methodology: VHB will maintain a revised project schedule and manage this project with guidance and meeting preparation assistance from Town staff. VHB will provide monthly invoicing with percentage of completion by task.

Deliverables: Monthly invoices.

4 Cost Proposal

4

Cost Proposal

Appendix C - Cost Proposal Sheet

Appendix C. Cost Proposal Sheet

COST PROPOSAL SHEET
FOR
PROJECT: Town of Carrboro Parking Plan

In the table below, please provide an estimated cost for producing a parking plan, including specific costs for each of the task categories. Firms will be evaluated on whether the proposed cost is reasonable in relation to the strategy and methodology proposed. Please refer back to Section 11.0 Evaluation, to assist in the preparation of the cost proposal. Please note per in the description of the Scope of Work in Section 5.0; the Town of Carrboro is seeking the Consultant's expertise for the preparation a quality parking plan. If there are tasks that are not listed in the scope that are integral to a plan, please provide them in a second, alternative proposal, and explain why they are critical.

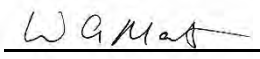
VENDOR:

The contents of this proposal are known to no one outside the undersigned company.

Company Name: VHB Engineering, NC, P.C. (VHB)

Contact Person: William A. Martin, Jr., PE

Phone #: 919.334.5616

Authorized Signee: 

Print Name: William A. Martin, Jr., PE

Print Title: Principal

#	DESCRIPTION	COST
1	Public participation	$15,000
2	Data collection	$8,000
3	Analysis	$20,600
4	Presentations	$10,000
5	Plan development	$11,000
6	Staff meetings, coordination, contract management	$7,000
	Miscellaneous Printing Costs	$1,400
	Total	**$73,000**

5 Similar Project References

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Similar Project References

VHB welcomes the opportunity to demonstrate our technical excellence, responsive service, collaboration, energy, and commitment to this project, this team, and its success. Our clients are pleased to speak about the high quality of work and responsive services they have received. The following page provides a listing of references for similar projects completed by VHB.

PROJECT	REFERENCE/ADDRESS	CONTACT INFORMATION
City of Concord Parking Management Study *Concord, NC*	**Scott Adams, AICP** Senior Planner, Planning & Community Development City of Concord 66 Union St. South Concord, NC 28025	704.920.5124 adamss@concordnc.gov
City of Wilson Downtown Parking Analysis *Wilson, NC*	**Ellen Hoj, AICP, CZO** Planning and Development Services City of Wilson 112 Goldsboro Street East Wilson, NC 27894	252.206.5289 ehoj@wilsonnc.org
UNC-Chapel Hill On-Call Contract *Chapel Hill, NC*	**Anna Wu** Assistant Vice Chancelor, Facilities Operations, Planning & Construction UNC-Chapel Hill Giles F Horney Building 103 Airport Drive Campus Box 1800 Chapel Hill, NC 27599	919.962.0761 awu@fac.unc.edu

"I am grateful to have worked with your team. You [Timothy Tresohlavy] are an awesome professional who is obviously passionate about your work. Your attention to detail and patience in our political environment was much appreciated."

- Ellen Hoj
Planning and Development Services
City of Wilson

www.vhb.com