

January 7, 2008

Gregory Krueger, PE
Project Manager
Michigan Department of Transportation
425 West Ottawa
Lansing, MI 48909

RE: Proposal for I-94 Truck Parking Management and Information System Development

Dear Mr. Krueger:

HNTB in association with Cambridge Systematics, Inc. and Kimley Horn is pleased to submit this proposal to develop a plan for a Truck Parking Management and Information System along the I-94 Corridor.

Drivers of commercial vehicles, motor carriers, shippers and the general motoring public are faced with a number of safety, operational and economic challenges as a result of current travel conditions in major transportation corridors such as the I-94 corridor. The Truck Parking Management and Information System project represents a significant opportunity for the state and other key stakeholders to identify these major challenges and to improve the safety and efficiency of commercial transport in the I-94 corridor. In particular, this project provides a unique opportunity to improve the management of the parking infrastructure that is available in the I-94 corridor.

The HNTB team will deliver an innovative solution that incorporates proven, yet state-of-the-art, technology solutions for the I-94 Truck Parking Management and Information System. We will apply lessons learned from our involvement in Vehicle-Infrastructure Integration (VII) activities to offer a solution that fits into MDOT's vision of the future. Our concept includes innovative means of delivering parking information through text messages and email alerts to drivers. We will make parking information available on the Michigan ITS website. Finally, we will work directly with transportation logistical support suppliers like GPSnet Inc., Qualcomm OmniVision, and others to integrate parking information into their systems. Our goal is to make this information available to every commercial vehicle operator on I-94 from Indiana to our border with Canada.

Our team is uniquely qualified to help MDOT on this project. Members of the HNTB team have worked extensively in the area of freight transportation in general and commercial vehicle operations (CVO) in particular. The team also is involved in many ITS and traffic operations projects undertaken recently in this corridor. Our combined experience in these areas will enable us to efficiently identify needs and offer effective solutions to truck parking challenges in the I-94 Corridor. As described in our proposal, the HNTB team offers the following three strengths that will benefit MDOT on this project:

1. HNTB's ITS design knowledge and capabilities, especially related to MDOT project experience.
2. Cambridge Systematics' unparalleled experience in Commercial Vehicle Operations, including national experience with similar systems.
3. Kimley Horn's knowledge of the regional ITS architectures and deployment plans in the corridor, along with their understanding of the statewide ITS software requirements.

The roles of our three firms correspond to their strengths to avoid overlapping activities and to provide specialized expertise in the key tasks. This, in turn, will provide optimal value to MDOT in delivering this project.

The HNTB team appreciates our strong relationship with MDOT in the ITS field, and we wish to sustain this relationship by offering you our commitment to give you a quality job - on time, within budget and to your satisfaction. Should you have any questions regarding our submittal, please do not hesitate to contact me at (313) 961-3330 or Paul Carr at (517) 333-3330.

Respectfully submitted,
HNTB Michigan, Inc.



Matthew Simon, PE
Associate Vice President



Paul Carr, PE
Project Manager

Capacity

Capacity is attested to in the 5100G form, which follows the cover form of this proposal.

Other Interests

The HNTB team, including subconsultants, certifies that these firms and individuals assigned to this project have not had, do not have, and will not have, for the duration of this project, any conflicting interests or connection, through any activity, contract, or business relationship, with any city, township, village, county, company, governmental agency, community, steering committee or selection team related to this service project for MDOT.

Additionally, the HNTB team understands that MDOT considers it a conflict of interest for a vendor to represent more than one party in relation to any given project regardless of which phases of the service are involved. Conflict of interest includes a proposal for a vendor to perform services for MDOT and the construction contractor on the same project.

Project Understanding

The I-94 Corridor is the primary economic link between the United States and its largest trading partner, Canada. Consequently, I-94 carries some of the heaviest commercial vehicle volumes in the United States. Facilitating the safe and convenient movement of goods along I-94 is critical to Michigan's economic vitality, and the Michigan DOT is seeking innovative ways to achieve this strategic objective through the use of advanced technologies.

The I-94 Truck Parking Management and Information System envisioned by the Michigan DOT is a critical component of comprehensive regional and statewide programs to deploy Intelligent Transportation Systems. Heavy truck volumes and limitations in truck parking were identified as common issues during the development of regional ITS Architectures and Deployment Plans throughout the I-94 corridor. Truck parking at many rest areas overflows onto the shoulders of freeway ramps and adjacent roads, creating potential hazards for other motorists and for the commercial vehicle operators. Expansion of the rest areas to accommodate the need for more

truck parking could be costly. Instead, identifying safe alternatives for the overflow and communicating that information to commercial vehicle operators are the primary challenges posed by this project.

The system design must integrate the ITS Architectures in each region along the corridor, to leverage infrastructure and systems planned, designed or in operation. The HNTB team understands these linkages and how they can be incorporated in the design of the I-94 Truck Parking Management and Information System. The HNTB team offers a clear understanding of existing infrastructure that can be used for this project. Our team has knowledge of parking availability in the corridor and ITS infrastructure that can be leveraged for potential cost savings. One of the innovations offered within our proposal involves the application of Vehicle-Infrastructure Integration (VII) technology to monitor the need for and the availability of truck parking on the prototype segment, and to provide such information to commercial vehicle operators. Related to this is the possibility of installing multi-function wi-fi hotspots at rest areas and other truck parking facilities. The HNTB team can utilize the techniques and information gathered from past research to implement an effective study in the state of Michigan.

NATIONAL AND STATEWIDE RESEARCH AND PROGRAMS

As they travel the nation's highways, drivers of commercial motor vehicles are faced with a number of operational and regulatory challenges including hours-of-service limitations, limited availability of parking at public or privately operated rest facilities, pressure resulting from just-in-time (JIT) delivery schedules, and severe congestion in many urban areas and/or major truck corridors. These issues also impact the general motoring public, agencies that maintain and operate the transportation infrastructure, and private business, in terms of the safety, operational and economic implications they pose. In response to these challenges, the US Department of Transportation (US DOT) and many state departments of transportation have sponsored research in each of these areas. In addition, a number of operational tests have been conducted to demonstrate the feasibility of certain countermeasures aimed at mitigating these challenges.

There is an extensive body of research that suggests that driver fatigue is a major contributing factor to crashes involving trucks. In a study conducted in 2002, the Federal Motor Carrier Safety Administration (FMCSA) determined that fatigue accounts for 8.15 percent of all fatal truck crashes. Research conducted by the National Highway Transportation Safety Administration (NHTSA) in 2000 suggests that driver fatigue may be a contributing factor in 30 to 40 percent of all crashes involving heavy trucks.

Congress - on more than one occasion - has directed the National Transportation Safety Board (NTSB) and USDOT to review the causes of accidents involving trucks and the adequacy of nation's parking supply for commercial vehicles. Specifically:

- In 1998, Congress directed the NTSB to review the causes of truck-related crashes.
- In a special investigation report, NTSB recommended that FMCSA create a guide to inform truck drivers about locations and availability of parking
- Section 4027 of the Transportation Equity Act for the 21st Century (TEA-21) specifically required US DOT to conduct a study to examine one of these issues - the adequacy of the nation's parking facilities on the National Highway System (NHS). This study - carried out by the Federal Highway Administration - documents a common complaint of truck drivers - the difficulty of obtaining information on truck parking availability.¹ Also as part of this study, operators of privately owned rest areas indicated that they often have available spaces available. The study recommended developing "Intelligent Transportation Systems" deployments to provide commercial motor vehicle drivers with real-time information on the location and availability of parking spaces.

Many states have undertaken studies to determine the extent to which the publicly and privately-operated rest areas meet the needs of drivers. In addition, the FMCSA's SmartPark program is designed "to develop, test, and demonstrate effective and innovative technologies that convey real-time information on the availability of parking at truck or rest stops to

truckers on the road. The project also is evaluating the business case for a service to provide such information"². As part of the SmartPark program, FMCSA currently is funding an evaluation of a video-camera based system at the Charlton rest area on the Massachusetts Turnpike (I-90). The system uses video cameras at the entrance and exit of the rest area, as well as image processing software to determine the number and overall length of commercial vehicles entering/exiting the facility. An offsite data collection system calculates the number of available truck parking spaces based on the input from the facility's cameras and software. The data collection system is updated via wireless network connection as commercial vehicles enter/exit the facility. The long-term plan for the system is to broadcast this information with the motor carrier industry. Subsequent phases are planned for the national SmartPark program.

In addition to the SmartPark program, a series of other operational tests have explored the notion of providing tailored traveler information to drivers of commercial vehicles or motor carrier dispatchers. For example, Cambridge Systematics working with the I-95 Corridor Coalition, developed the operational concept for FleetForward. This concept was advanced as an operational test that provided highly-customized information to motor carriers operating in the I-95 corridor. Similar operational tests have been conducted throughout the US.

TRAVELER NEEDS

The HNTB team offers the experience of related national projects in addition to a unique understanding of traveler information needs in Michigan, including those related to commercial vehicle operations. Commercial vehicle operators require multiple types of information, such as travel times, traffic incidents, work zones, and border crossing wait times. As information on truck parking is provided to commercial vehicle operators, other traveler information can be provided over the same communications network and ITS infrastructure to promote efficient goods movement across the State. For example, trucks headed eastbound for Canada may select a more optimal route by avoiding incidents, construction bottlenecks and heavy congestion if they obtain this information in advance of the I-94 / I-69 interchange

1) Study of the Adequacy of Commercial Truck Parking Facilities, FHWA-RD-01-158, 2002

2) FMCSA Office of Analysis, Research and Technology Highlights. Technology and Maintenance Council Annual Meeting, September 2007.

in Calhoun County. Our plan is to not only leverage existing infrastructure, but also to leverage current or anticipated operations and software systems to the maximum extent.

A system such as this may require new software to monitor parking availability and to disseminate parking information to commercial vehicle operators. The integration of these requirements with the statewide ITS software is another aspect of the HNTB team approach to this project. Since I-94 spans Michigan from west to east, it will be necessary to have a common software system and accompanying operational practices throughout the corridor. The HNTB team will design the system to be scalable for expansion to other corridors within Michigan as needed.

Michigan has clearly recognized that there is an opportunity to improve the safety and efficiency of commercial transport in the I-94 corridor and, in particular, the management of the parking infrastructure that is available. The HNTB team stands to offer the experience of three firms to connect the needs of Michigan travelers, commercial operators, and other stakeholders with the needs of the Department.

SPECIALIZED EXPERIENCE

The roles of our three firms correspond to their strengths to avoid overlapping activities and to provide specialized expertise in the key tasks. Cambridge Systematics will lead the Concept of Operations development, HNTB will lead design activities, and Kimley Horn will support the linkage to the regional ITS architectures and the statewide software system assessment.

The HNTB team offers the following three strengths that will benefit MDOT on this project:

1. HNTB's ITS design knowledge and capabilities, especially related to MDOT project experience.
2. Cambridge Systematics' unparalleled experience in Commercial Vehicle Operations, including work with MDOT on the I-94 corridor and the CVISN program, but also national experience with similar systems. Kimley Horn's knowledge of the regional ITS architectures and deployment plans in the corridor, along with their understanding of the statewide ITS software requirements.
3. Kimley-Horn and Cambridge Systematics have been involved in the development of regional ITS

architectures and deployment plans across the State including active projects in the Southwest and Metro Regions that address the needs of I-94 corridor users. Both firms also participated in the development of the specification for statewide Advanced Traffic Management Systems (ATMS) software. The software, to be procured in 2008, will help standardize operational practices, traffic reporting and traveler information services of MDOT and partner agencies. In addition, both firms along with HNTB are initiating a project that will include the development of a Concept of Operations for the statewide Traffic Management Center in Lansing.

Knowledge and understanding of these projects is crucial to the development of a truck parking management and information systems plan for the I-94 corridor. The proposed statewide TMC as well as existing TMC's in Detroit and Grand Rapids will monitor traffic conditions in the corridor and can provide information that will be useful to long distance commercial vehicle operators. The portion of I-94 from Metro Airport through Detroit into Macomb County has CCTV, Dynamic Message Signs and sensors that are currently tied to the Michigan ITS Center in Detroit. I-94 in the Southwest and University regions is likely to be one of the highest priority corridors statewide for ITS expansion, but due to budget constraints deployments are likely to be limited to urbanized areas and major interchanges such as I-94/I-69. MDOT also is pursuing the purchase of travel time data from private providers, which could make it economically feasible to cover large stretches of non-urban freeway. This information would be obtained through cell phone polling, a technology that is being considered by a number of states.

Combining these sources of data with information gained from commercial vehicles themselves could help improve the quality of traveler information available to both the commercial drivers and the general public. The statewide ITS architectures, ATMS software, Traffic Management Centers and the MIDrive website together will provide a framework for optimizing the coverage and quality of information available to roadway users.

The high-level design and functional design that will be developed in conjunction with tasks 3 and 4 will

specify in greater detail an overall approach for the I-94 corridor and will provide a design for prototyping the truck parking management and information system in one segment of the corridor.

The outcome of this project will be a synergistic parking management system plan building on public and private cooperation to improve parking supply and real-time parking supply information in the I-94 corridor from Indiana to the Canadian border to reduce trucking delay and trucking induced congestion and safety problems. MDOT's ITS programs will play a key role in collecting and providing real-time parking supply information.

TASK 1: PROJECT MANAGEMENT

Project Management is a vital part of a successful team; simplifying communication and accountability. Bringing together the knowledge of three firms, the HNTB team will be managed by Paul Carr. During his 9 years with the firm, Paul has managed a number of projects for HNTB Michigan's road design group. Based in Lansing, Paul has joined the ITS Group and will be the central point of communication on the project for both MDOT and the participating team members.

Paul's approach to project management is one of proactive participation both with MDOT and the team members. Along with the required MDOT project progress meetings, Paul will require the Team members to participate in internal update meetings in an effort to assure the timely completion of the project deliverables and the deliverables very highest levels of quality.

To ensure organization, HNTB has implemented a document control/management program.

ProjectWise

As projects become more complex the need to collaborate with other HNTB offices and outside project team members becomes glaring. Ensuring that all project participants are utilizing the same data to make decisions is paramount. Communication is a key factor, especially in sharing design data and the accompanying documentation.

In the current project landscape email and FTP sites have become defacto standards in sending

documents between project participants, especially when communicating with project members involving multiple locations. Unfortunately this creates duplication of data. Therefore this project will be managed by Project Wise. ProjectWise is a document management and control system. Built around AEC data it extends to all documents within a project. ProjectWise ensures that all project team members including distributed members across disparate locations are accessing a central repository of data and documents.

TASK 2: DEVELOP CONCEPT OF OPERATIONS

The objectives of this task are to:

- Assess the adequacy of existing truck parking facilities in meeting the needs of commercial drivers operating in the I-94 corridor;
- Develop a concept of operations for a truck parking management and information system; and
- Identify candidate organization(s) to operate and maintain the system.

It is our understanding that the development of a plan for a truck parking management and information system along the I-94 Corridor will:

- Examine the extent to which existing public and privately operated rest facilities meet the needs of commercial operators and the demand for these facilities. This will include a series of interviews with public and private stakeholders and development of an inventory of these facilities. We envision working closely with and interviewing individual truck and bus companies/drivers, requesting information about the location and capacity at publicly-operated facilities, and working with organizations such as the National Association of Truck Stop Operators, Michigan Trucking Association, and other special interest groups to better understand the needs of third-parties and the extent to which existing facilities in the I-94 corridor meet the needs of truck and bus operators. We also will examine the broader safety, operational and economic implications that face the state, motoring public and businesses. Finally, it will be important to understand the projected increases in truck vehicle miles traveled (VMT) and how these increases will impact the demand for

truck parking. To this end we would expect to consult Michigan’s Long Range Plan, statewide model, and other corridor-level planning studies that have produced these forecasts.

- Identify strategies for providing better information about the availability of parking spaces and managing these facilities. Once there is a basic understanding about the demand for parking spaces and the needs of motor carriers, rest stop operators, and other stakeholders, the study team will define a range of operational strategies as well as strategies for making information about parking inventory in the corridor available to commercial truck and bus drivers. For example, Michigan has an extensive ITS/traffic operations management infrastructure in place that can be leveraged for purposes of exchanging information. In addition, the State’s Commercial Vehicle Information Systems and Networks (CVISN) program has designed systems to support the exchange of commercial vehicle safety and credential data and conceivably could support the exchange of information about truck parking. HNTB, Kimley Horn and Cambridge Systematics are actively engaged in a number of ITS projects in Michigan. Cambridge Systematics supported the state with the development of its ITS/CVO business plan and with the design for its implementation of the CVISN architecture.

We believe there are many opportunities to leverage existing information systems and infrastructure that is in place or will be in place in the near future. The output of this effort will be the designation of a series of strategies for consideration by MDOT and other interested parties and criteria for selecting preferred strategies that can be used for purposes of selecting a preferred strategy or strategies.

- Developing a concept of operations for a corridor-wide parking management system, a high-level design for the corridor and a functional design for

a pilot implementation of this system. Building on the strategies identified earlier in the study, the concept of operations will incorporate ongoing ITS planning, design and deployment projects in Michigan as well as our collective national experience in the commercial vehicle operations and ITS arenas. The concept of operations will consider four key elements: 1.) monitoring incoming and outgoing commercial motor vehicles; 2.) determining the availability of parking spaces based on capacity and the current number of vehicles currently parked in public and privately operated facilities; and 3.) distributing information about the availability of parking spaces directly to drivers, dispatchers or both; and 4.) the most effective means of communicating this information (e.g., web sites, HAR, VMS, Wi-Fi hotspots, etc.).

Work Steps

1. Conduct a kick-off meeting with key stakeholders to review the project’s goals, objectives, and work plan. In consultation with MDOT’s Project Manager, adjust the project’s work plan to reflect comments received at the kick-off meeting.
2. Develop an inventory of public and privately operated parking facilities in the I-94 corridor. This step will include:
 - Requesting parking inventory information from MDOT that may be available for publicly operated facilities. In the event this information is not readily available, our team is prepared to undertake an effort to collect this information. We also will assess the infrastructure that may be in place at these facilities that could be leveraged for purposes of determining and transmitting information about the availability of parking spaces (e.g., CCTV, loop detectors, etc.).
 - Meeting with and/or requesting parking inventory information from representatives of privately-operated facilities. We also will assess the infrastructure that may be in place at these facilities that could be leveraged for purposes of determining and transmitting information about the availability of parking spaces (e.g., CCTV, loop detectors, etc.).
 - At MDOT’s option, the parking inventory information can be entered into the Department’s

INNOVATION

More than 300,000 trucks are equipped with on-board computers and communications provided by Qualcomm. The team will work to develop an agreement on behalf of MDOT to make this information available to Qualcomm and other data/service providers.

geographic information system (GIS) (see graphic on next page.)

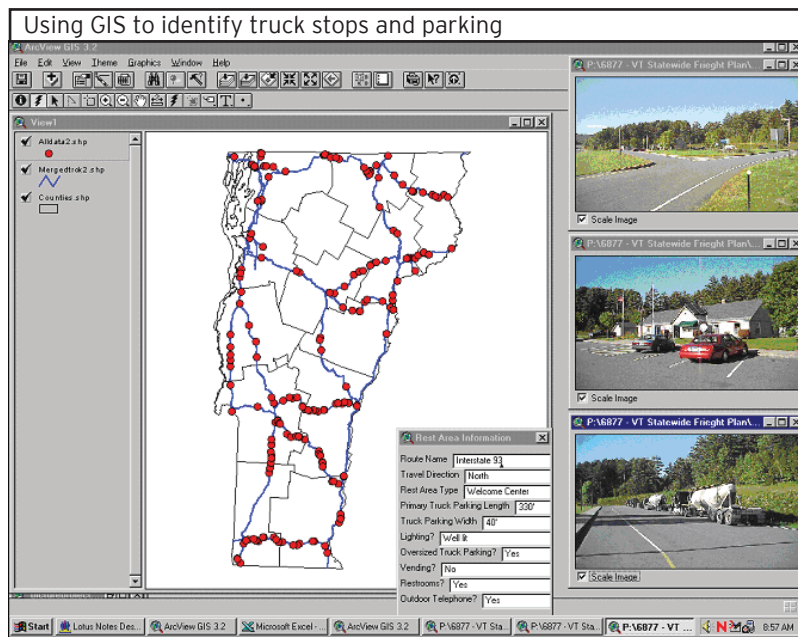
3. Identify truck parking “hot spots” or “bottlenecks.” We will obtain input from key stakeholders regarding truck parking issues and hot spots in the I-94 Corridor and strategies for implementing a truck parking management and information system. Specific activities include:
 - Meeting with MDOT officials as well as officials from the State Police and other key public sector stakeholders to identify truck parking “hot spots” where demand for parking spaces exceeds capacity and where trucks may park on the shoulder of the highway. We also will begin to explore strategies for managing the parking facilities more effectively and collecting/sharing information about the availability of parking spaces.
 - Meeting with private sector stakeholders to discuss truck parking hot spots. We also will begin to explore strategies for managing the parking facilities more effectively and collecting/sharing information about the availability of parking spaces.
 - Hot spot information collected during meetings or interviews with key public and private stakeholders also could be entered into the MDOT’s GIS.
4. Meet with representatives from MDOT, existing traffic operations centers, and other interested parties to discuss how to best leverage existing ITS and traffic management capabilities and services in the I-94 corridor. We also will examine the extent to which this project could leverage other efforts in Michigan in the commercial vehicle operations area such as the Commercial Vehicle Information Systems and Networks (CVISN) program.
5. Review Michigan’s Long Range Transportation Plan, statewide model, and other corridor-level planning studies to determine projected increases in truck traffic in the I-94 Corridor and how these increases will impact the demand for truck parking.
6. Conduct a literature review to identify related efforts at the national level that can provide best practices or lessons-learned for consideration by MDOT and the study team. Specifically we will examine the SmartPark initiative and efforts

INNOVATION

“Getting the word out.” It is imperative that we reach out and inform the CVO community about the new system. Integrating the user interface of the system to the Michigan ITS website as a subdomain: www.truckparking.michiganits.com can provide a landing page for dispatchers and logistics partners to access up to date parking availability. Such a solution would be quick and easy - providing immediate benefit, while more detailed, tightly integrated public-private partnerships are developed. Likewise, as an outreach mechanism, marketing and advertisement of the system could be posted to existing and/or planned traveler information kiosks at the rest areas.

at the state level (e.g., in the Commonwealth of Massachusetts) to deploy SmartPark technology and services.

7. Develop a Draft Concept of Operations. The draft COO will encompass:
 - Information pertaining to existing rest stop facilities in the I-94 Corridor
 - Information pertaining to the adequacy of existing facilities, hot spots, and projected future demand for truck parking
 - A proposed strategy or strategies for leveraging existing public or privately-owned infrastructure for purposes of collecting and disseminating information about the availability of truck parking. Specifically the concept of operations will consider strategies and technology for monitoring incoming and outgoing commercial motor vehicles, for determining the availability of parking spaces based on capacity and the current number of vehicles parked at public and private facilities and for distributing parking information to drivers and/or dispatchers.
8. Meet with key stakeholders to review and solicit feedback. Our team will meet with MDOT representatives and other interested parties to review and reach consensus on the draft COO. Feedback received at this meeting will be incorporated into a final version of the COO.



TASK 3: HIGH-LEVEL DESIGN

In this task the HNTB team will develop the high level design for the I-94 truck parking management and information system. This high-level design will cover the entire I-94 corridor from Indiana to Canada. There are several distinct components to this task:

1. High-Level Corridor Plan

- The primary parking facilities are MDOT rest areas and commercial truck stops. The HNTB Team will develop two detection concepts for rest areas, one for the main entrance and exit to the rest area and one for the access and egress to the truck only-parking area. For commercial truck stops, the HNTB Team will develop a typical access/egress detection concept that could be applied at any number of access or egress points at the truck stop. If any alternative parking sites are identified during Task 2, similar concepts will be developed for that/those sites.

9. Identify candidate organization(s) to maintain and operate the truck parking management system. Once we have reached consensus on a COO, the study team will identify candidate organization(s) to operate and maintain the truck parking management system. Criteria that may be considered when identifying candidate organizations include:

- The extent to which an organization already operates and maintains systems that would be part of the potential solution
- The willingness of an organization to take on this responsibility
- The ability of the organization to market this service and deliver the information in a timely, effective, and cost-competitive manner. The findings of this work step will be summarized in a technical memorandum that will be submitted to the MDOT Project Manager.

Deliverables

- Kick-off meeting and interviews/meetings with key stakeholders
- Draft and Final Concept of Operations
- Inventory of parking facilities in the Michigan segment of the I-94 Corridor.
- Technical memorandum identifying candidate organization(s) to operate and maintain the system.

- HNTB Team will assess a variety of private traveler information services. First we will develop criteria for assessment of the private services for applicability. Criteria could include, for example: does the service market to trucking; does the service meet the needs of trucking; does the service provide real-time information; and, can the service operate without direct financial support from MDOT. Second, we will open a dialog with the service provider to determine if they would be willing to enter into a memorandum of understanding to cooperate with MDOT to provide long-term, real-time truck parking availability information and whether they are willing and able to provide value-added information to trucking such as demand responsive information and parking availability forecast information.

- From the evaluation of parking facilities developed in Task 2, the HNTB Team will identify the facilities that will provide the most benefits when parking data is available. It is anticipated that the most important parking facilities will be those closest to major freight terminals, intermodal transfer facilities and the border station. Parking facilities nearest freight terminals in urban areas will have highest rating for inclusion in the plan.

2. High-Level Communication/Network Plan

- Communication between new detectors and the applicable MDOT regional traffic management center will need to be stable and secure. Bandwidth will depend on the types of data. To the extent possible, communication will be integrated into existing and planned networks to support the Michigan Regional ITS Architectures.
- Both internal and external center to center communication with MDOT will be accomplished on MDOT networks similar to other ITS applications. Communication with external sources will be made via the Internet or via secure communication servers in accordance with the Michigan Regional ITS Architectures.
- Data formats will be developed to support communication with external information service providers. NTCIP standards will be used available to support open data sharing and integration.
- Database requirements will follow data format requirements. Database structure will be shared with private information service providers to facilitate sharing of information in real-time.
- Functional requirements will be developed for software. Modifications may be needed to the central ITS software, software used at regional ITS centers and software used by private information service providers. Requirements will address inputs (data formats, data content) and output (parking information;

processing latency, and other elements to support the COO developed in Task 2.

3. Implementation Plan

- The HNTB Team will create local segments for implementation of the I-94 Parking Management and Information System. The process for segmentation will include a variety of factors, including: ideal, satisfactory or marginal parking proximity to trucking destinations or freight terminals; multiple parking facilities for each trucking destination; and, ability to support communication to a primary MDOT regional ITS center.
- The HNTB Team will develop a high-level cost estimate for implementation of each segment including detection and communication. A cost estimate database development and software development for a central system with regional components will also be prepared. Regional components will be tied to applicable segments.
- Operations costs include human resources, communication and electricity for monitoring parking management systems. The HNTB Team will endeavor to identify ways to minimize operations costs by sharing some of the responsibility for operations with the private information service providers.
- Maintenance includes costs to repair or replace detectors and communication devices. The HNTB Team will prepare an estimate for preventative and diagnostic maintenance. The estimate will be broken down by segment and by central system features.



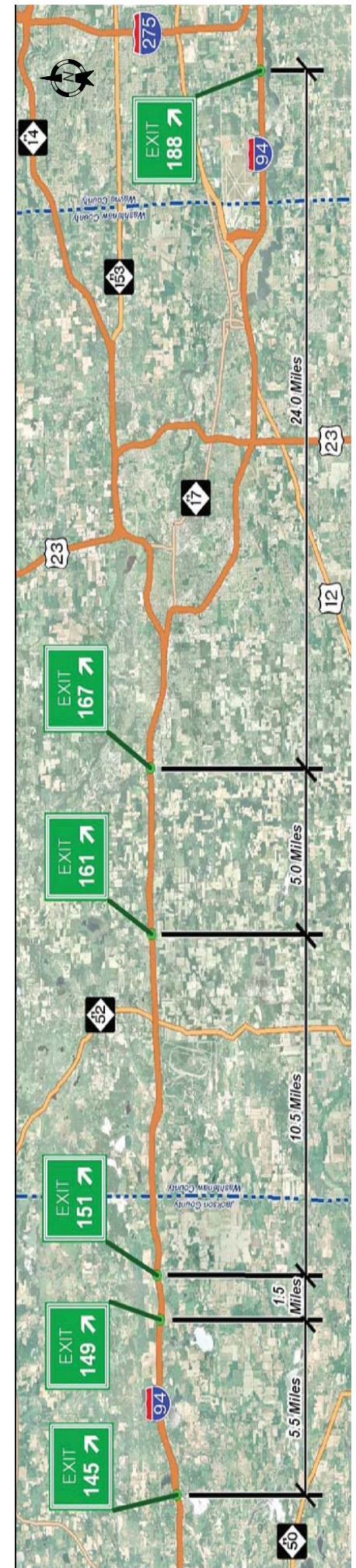
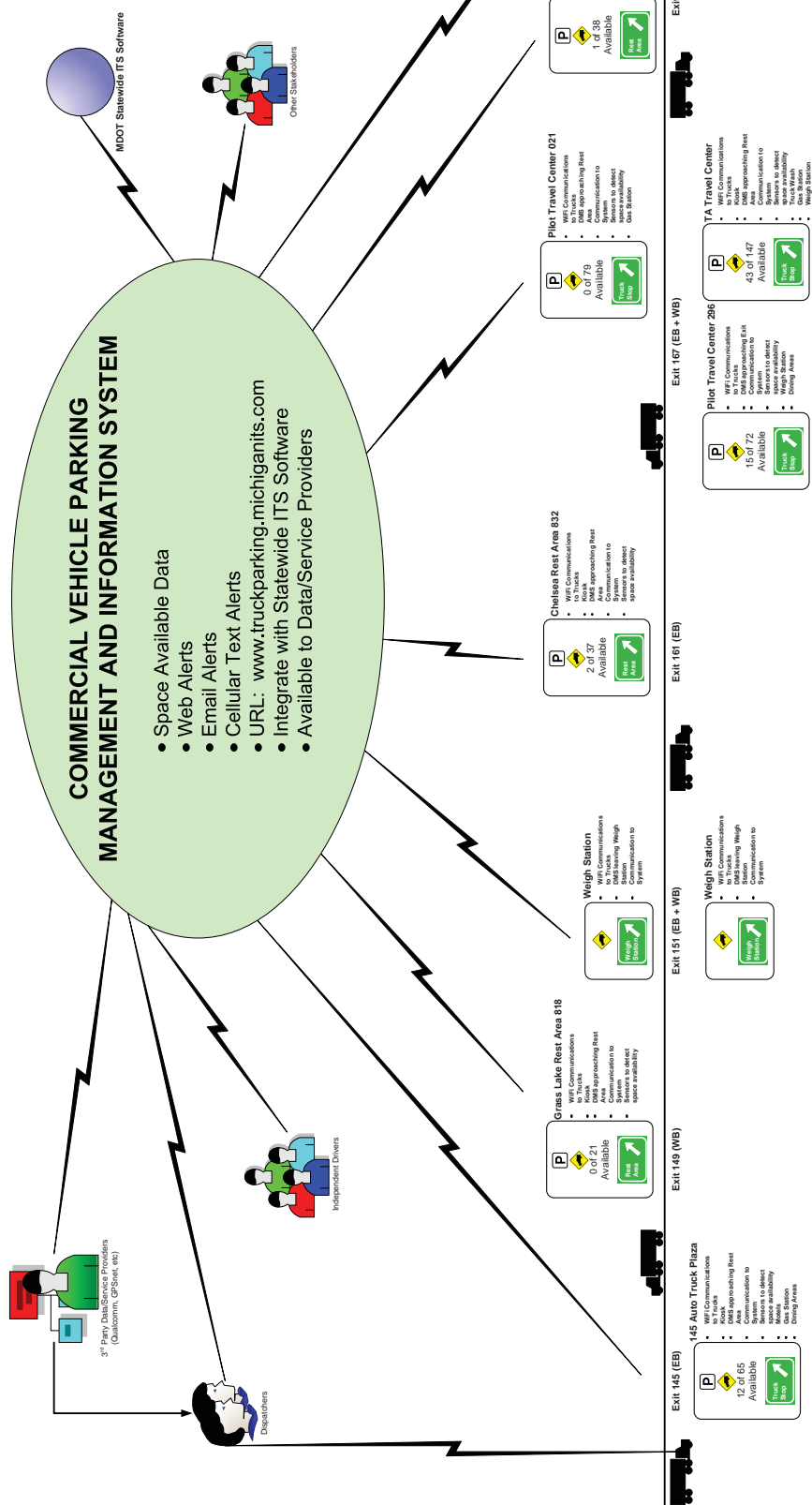
INNOVATION

A successful truck parking system hinges on getting the information to the driver in a timely manner - preferably directly into the cab. Commercial vehicle often utilize cell phone texting. One innovation would be to develop the system such that drivers(users) could subscribe to cellular text alerts.

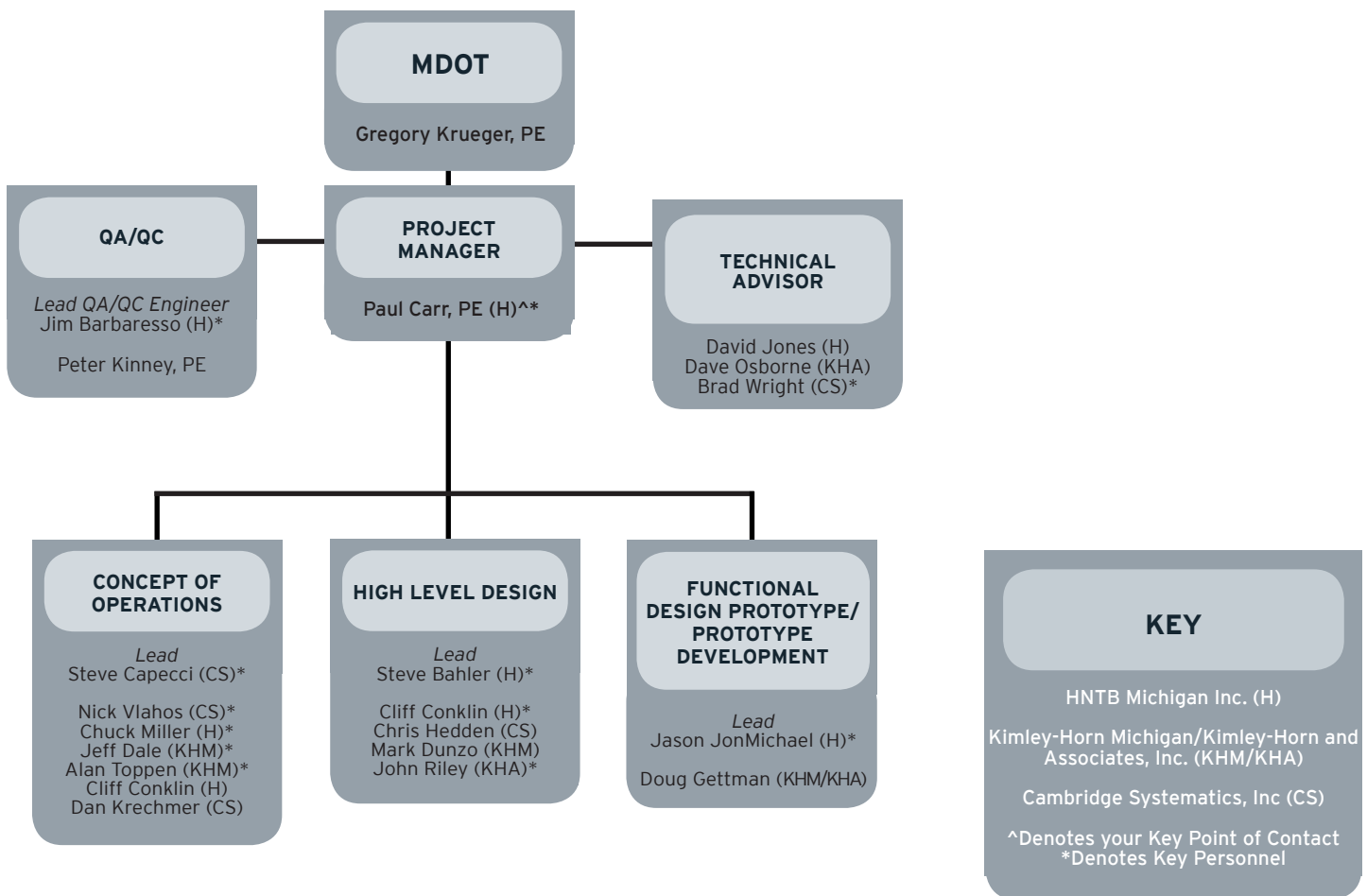
Once segments have been defined and applicable costs determined, priorities for implementation will be established. A prototype segment for detailed design will be identified from the list of priorities.

TASK 4: FUNCTIONAL DESIGN AND PROTOTYPE

Following the high-level design and requirements identified in Task 3, the Team will develop a functional design for a prototype segment along the corridor. Based on an initial field review of the I-94 Corridor, we have identified a potential prototype segment that runs from Exit 145 to Exit 189, approximately 46 miles, along the corridor and is detailed in the graphic on the following page. This segment includes MDOT facilities and private truck parking areas, including the new Chelsea RA and the Grass Lake rest area. The weigh stations at Exit 151 offers opportunity to leverage existing infrastructure and a potential tie-in to other CVO functions, such as CVISN. The weigh stations operate for both eastbound and westbound traffic and may be a key opportunity to disseminate information to the driver - drivers are removed from the mainline and traveling at slower speeds. Weigh stations will also play an important role in outreach and marketing of the truck parking system.



TEAM QUALIFICATIONS



Qualifications of the Team

The HNTB team combines the experience of three firms with both national and local ITS projects.

Jim Barbaresso will lead the Quality Assurance portion of the project. As HNTB's National ITS Practice Leader, he brings 30 years of experience in the field.

Project Manager **Paul Carr** has over 9 years of roadway experience; giving him a different vantage point for advice and innovation.

David Jones (HNTB), **Dave Osborne** (KHA), and **Brad Wright** (CS) will serve as Technical Advisors for the project; guiding the team toward innovative solutions while focusing on MDOT's needs.

Steve Capecci of Cambridge Systematics will lead the Concept of Operations effort. His experience with past truck parking and first hand experience with operational tests that provide real time information to commercial vehicles operations make him a particularly valuable team member.

High Level Design will be lead by **Steve Bahler** of HNTB. His 40+ years of experience include projects in ITS, planning, architecture and systems engineering.

Jason JonMichael of HNTB will lead the Functional Prototype task. Jason has worked on a number of MDOT projects in the past, including VII design.

The entire team is outlined in the diagram above.