

Volume 1: Technical Proposal and Management Approach

Part A: Cover Page

September 30, 2016

Federal Highway Administration
Office of Acquisition & Grants
Management
Office of Contracting Operations
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It is with much excitement and pride that the City of Orlando submits the enclosed application documents for the United States

Department of Transportation / Federal Highway Administration (FHWA) Accessible Transportation Technology Research Initiative (ATTRI) Application Development. Our team has worked diligently over the past several weeks to develop a unique program that connects smart wayfinding and navigation applications with public and private systems to provide updated, easily understood guidance for disabled populations as well as tourists and commuters.

Beyond the specific programmatic pieces outlined in our proposal, our City possesses two distinct advantages that will ensure our effort is one that is truly transformational on the largest scale possible. First, we have a culture of collaboration and public private partnership that is unmatched anywhere. This collaboration between engineers, technology integrators, and agency staff is critical to creating smart wayfinding systems for changing urban environments. Our proposal also includes applications to engage and include under-served and disabled communities as we have done with recent major multi-billion dollar community initiatives. Second, and equally important, we are America's number one destination for visitors and business travelers. Smart technologies have already improved wayfinding and navigation in most cities however they have often segregated travelers from their surrounding due to the reliance of looking at a screen. By providing visual, audible, and haptic feedback, this one-of-a-kind platform will not only aid disabled users, but provide more experiential wayfinding and navigation to the more than 60 million visitors from around America, and around the world who visit Orlando.

Broad Agency Announcement Number:

DTFH6116R00022

Proposal Title: Accessible Transportation Technology Research Initiative (ATTRI)

Project Duration: 34 months

Type of Business: Municipal / City

Complete List of Subcontractors:

Lighthouse Central Florida

Vanasse Hangen Brustlin, Inc.

Lynx

Florida Department of Transportation

SODO

Orlando Health

Florida Hospital

MetroPlan Orlando

Technical and Administrative points of contact:

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For those reasons and so many others, I am confident that our application is going to receive a very favorable response. We look forward to this response and to providing a unique technological solution to address the mobility constraints faced by the disabled population. This smart wayfinding and navigation application has the potential to improve the quality of life of all of its users. So please, let us get started!

Sincerely,
City of Orlando



Charles Ramdatt
Deputy Director of Public Works



Part B: Executive Summary

The City of Orlando is committed to ensuring the safety and reliability of the transportation network for all users. This focuses supporting the mobility goals of those members of the community with visual, hearing, cognitive, and mobility challenges. Lighthouse Central Florida is a nonprofit organization committed to supporting the vision impaired community with the tools needed to lead independent lifestyles. This organization has two locations in Orlando, one located in the South Downtown neighborhood, the other in the North Downtown neighborhood. Both locations are in proximity to other health services and transit connections, as illustrated in Figure 1. In addition to the Lighthouse Central Florida, Orlando has a number of assisted living and retirement homes in the downtown area, whose residents rely on the local transit and the pedestrian facility network on a daily basis. Not only do these areas support hundreds of pedestrians per day, many of which are disabled, but they have recently experienced pedestrian fatalities.

Based on these factors, the City will deploy the proposed SafeWayz program which is a smart wayfinding and navigation application to assist those with mobility constraints such as visual, hearing, physical, or cognitive disabilities navigate Orlando safely. SafeWayz will utilize data currently available on the City's open data source platform as well as end-user, real-time data to improve wayfinding, navigation, and safety within the City. By providing visual, audible, and haptic feedback, this application has the potential to offer new-found freedom to mobility constrained populations.

DESCRIPTION OF THE PROGRAM TECHNICAL CHALLENGES

Some technical challenges that may be associated with the proposed smart device application includes available data, quality of data, available infrastructure, identification of infrastructure issues, backend technology support, and device limitations. Adoption rates of the technology will be another factor in obtaining user feedback. The SafeWayz application must be used with a "smart" device that has internet and GPS capabilities.

SafeWayz will serve as a case study and will be the first pilot project for the City of Orlando's open data platform. This application will allow the City to understand how this platform can become more dynamic to support further third party development. There are many applications that offer guidance to pedestrians, but very few tie into City databases or resources to provide routing where proper infrastructure exists, and to safely reach the desired destination. Testing within the pilot areas will provide an understanding of what data is needed, quantity and quality of information and what user feedback can be expected. The areas selected contain varying facilities in all ranges of conditions. The technology's ability to navigate around these conditions based on user preferred mobility choices will be tested at the highest levels, ensuring that a scalable deployment is possible.

COST ESTIMATES

The SafeWayz program is anticipated to cost approximately \$1.325 million and will be fully operational within 14 months. The program will be monitored for 22 months, after which the City will conduct a pedestrian access study to evaluate the return on investment for the program. This study will include recommendations for further deployment areas if the program is deemed successful and accomplishes the following objectives:

- Overall adoption of technology
- Overall increase in access for disabled pedestrians
- Overall decrease in reported issues, and decrease in maintenance response time

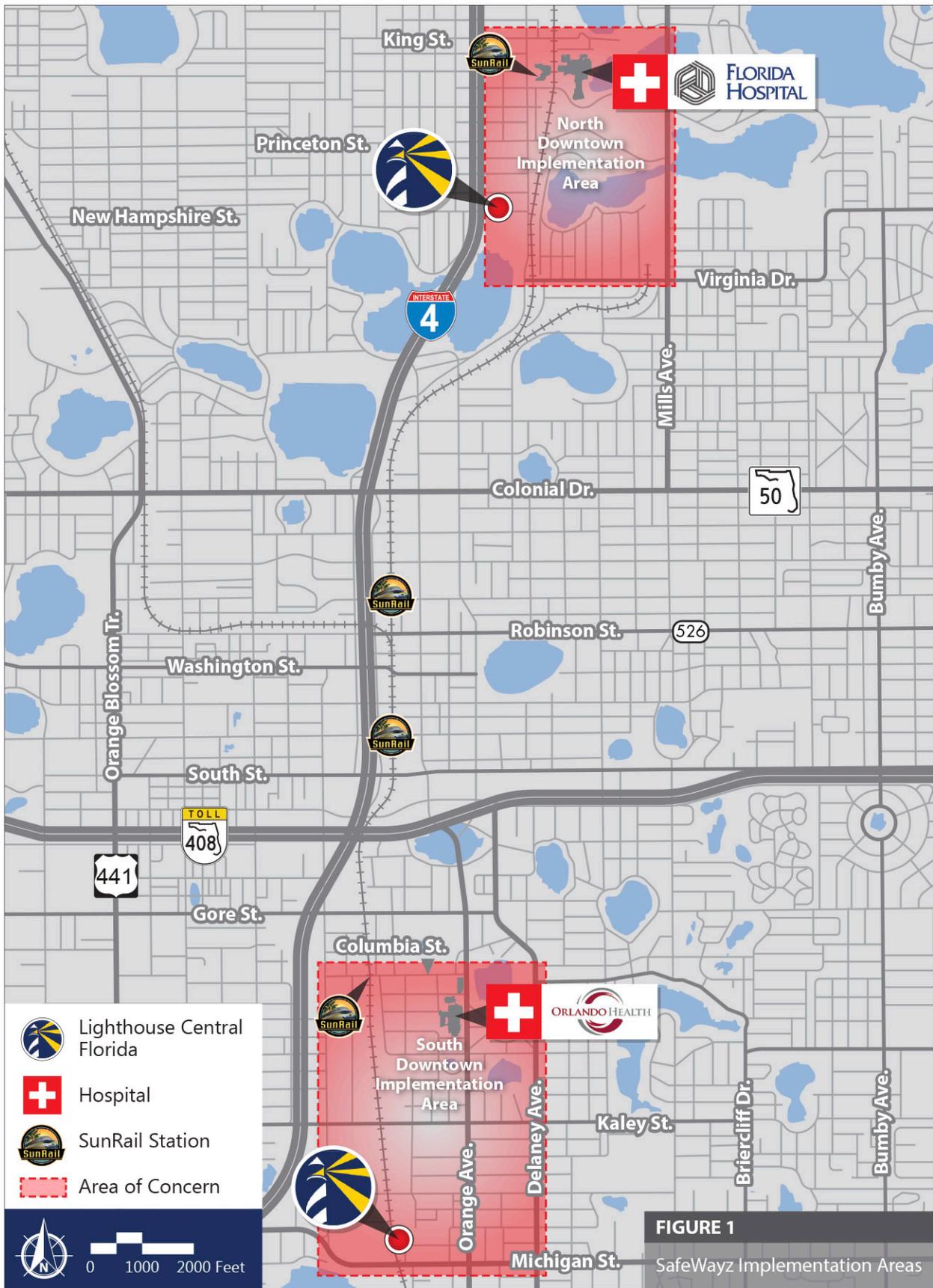


FIGURE 1
SafeWayz Implementation Areas

Part C: Innovative Claims:

The City of Orlando's SafeWayz proposal builds upon an initiative currently underway by Seattle's Department of Transportation (SDOT) as part of the Seattle Pedestrian Master Plan. Within the Seattle Master Plan, SDOT is developing a mobile device wayfinding application to assist those with mobility issues such as visual, hearing, physical, or cognitive disabilities navigate the City safely. The City of Orlando proposes to utilize similar technology to assist those pedestrians within the application areas identified in Figure 1. This will involve utilizing data currently available on the City's open data source platform and utilizing crowd sourced information in the application to alert pedestrians about special conditions, similar to the application Waze.

SafeWayz will also build upon the Florida Department of Transportation (FDOT) PedSafe program, which is an innovative pedestrian and bicycle collision avoidance system that uses Connected Vehicle (CV) technologies in conjunction with current Pedestrian Collision Avoidance Systems to minimize or eliminate pedestrian and bicycle crashes at Florida's high-risk intersections. Utilizing CV technology, the PedSafe program addresses the safety of pedestrians within an influence area of intersections, as well as, ties into the traffic signal system to capture phasing changes and detector actuations at each intersection. In addition, it provides incident and congestion management within the PedSafe area. To build upon a uniquely identified pilot project, the City's proposal will enhance and advance the FDOT PedSafe program while improving the mobility of travelers with disabilities. In order to provide a broad testbed for the safety at intersections, the PedSafe and ATTRI application will be performed at specific locations within the Central Florida region in order to provide scalability and transferability to other locations throughout the United States.

Part D: Vision Statement (2 pages)

The City of Orlando has prioritized the safe, efficient and equitable movement of all public mobility throughout Central Florida. Working with regional public agencies, and private partners, the City has committed to developing this important smart wayfinding and navigation application to increase the mobility and safety of its mobility constrained populations. In support of this mission, the City has made extensive efforts to design, build and retrofit its transportation facilities to serve all of the transportation users, including those with disabilities in accordance with the Americans with Disabilities Act of 1990. The City intends to leverage and integrate its existing technologies and systems through SafeWayz in order to support the independent travel of persons with disabilities traversing vehicular and pedestrian transportation infrastructure.

The City of Orlando has partnered with Lighthouse Central Florida, Central Florida's only private, non-profit agency offering a comprehensive range of services supporting people living with sight impairment within the region (Orange, Seminole, and Osceola Counties). Through effective programs, proven curricula, certified instructors and years of personal and professional experience, Lighthouse Central Florida ensures that individuals of all backgrounds and diverse disabilities have the tools they need to lead productive, independent lives while pursuing their dreams and goals, without limitations. The organization has two locations within the City of Orlando, illustrated on Figure 1, from which they serve the community. The City is striving to support this organization by ensuring that its patrons can safely and efficiently access these facilities which provide these important services to the community.

In addition to Lighthouse Central Florida, Orlando is home to multiple assisted living communities that depend on the pedestrian and transit facilities in and around downtown. The City's vision for a safe and equitable transportation system will utilize SafeWayz to allow persons with impairments to find their way, navigate the City and make full use of all available transportation options. The proposed application area of Smart Wayfinding and Navigation, would utilize technology to assist those with visual, hearing, cognitive, or mobility challenges to navigate to their destinations. Implementation areas for this pilot program have been identified and illustrated within the study area.

The application developed called SafeWayz is an innovative pedestrian wayfinding and navigation application. It will provide assistance to all pedestrians and offer routing based on user preferences. Within the user preferences, a selection can be made if the pedestrian is using assistive devices, including device type, to better assist with routing tailored to that device. Routing will be made possible by connecting to the City of Orlando's Open Data store for real time information on physical infrastructure conditions, closure and resources. More accessible options for mobility will be identified for all users based on their destination and user preferences, connecting more pedestrians with the infrastructure and supporting a more accessible City.

Success of the application in order to achieve the objectives identified above can be measured in a number of ways, but the following are some performance measures that can be used:

- Increased adoption of the application over time
- Positive response from user feedback
- Increased reporting of infrastructure issues to the open data store from the application
- Overall increase in accessible access for the Cities Citizens

The proposed SafeWayz application will support and provide assistance in wayfinding and navigation for all, pedestrians and further assist our citizens with disabilities. It supports the City of Orlando's vision to provide all members of the community with safe access to the transportation network in order to obtain the goods and services they desire. Implementation of the proposed application will provide data to FHWA and USDOT on the impact of this type of technology, best practices and overall scalability of this type of approach. As cities and states advance into the future, opportunities to use technology for assistance are becoming more prevalent. This case exemplifies a best case practice for Big Data and how it can be used alongside technology advancements to serve the City's Citizens in an efficient and practical manner.

Part E: Technical Rationale (6 pages)

The proposed technology to support the City's solution includes various pieces. Many of these pieces exist within our current IT infrastructure. The application would create a partnership between open data platforms, the City's Transportation Department, Public Works Department, community relations and Planning, and our citizens. While several programs have been developed globally to support wayfinding and navigation for persons with disabilities, few have ever created this union of available resources. The City's proposal will offer a very unique look at this concept and provide FHWA/USDOT and researchers globally with a best practice analysis and refined methodology to implement an effective wayfinding and navigation platform. The following technical rationale will discuss Challenging Technical Areas this type of technology may encounter, mitigation of challenges and risk, and parallel technologies both globally and regionally that this proposed application would supplement.

Challenging Technical Areas:

Challenges associated with the proposed SafeWayz application includes the availability of data, quality of data, available infrastructure, identification of infrastructure issues, backend technology support, and device limitations. Adoption rates of the technology will be an additional factor in getting user feedback. For the application to be used, it must be used with a "smart" device that has internet and GPS capabilities.

Technical Risk Mitigation:

The proposed SafeWayz program will be facilitated through an application that will access the City's open source data store. The developer will handle the maintenance of the application and updates based on user feedback. Where data is not available, the City will collect it as part of an effort to create a digital infrastructure catalog. The data will be collected per the standards established by the FDOT and FHWA for cataloging transportation infrastructure. Providing data at this level of detail will provide adequate information to support a complex routing algorithm based on user preferences. Partnering with non-profit, and disability assistance organizations that provide service for persons with disabilities in education, achieving quality of life and job placement will allow the City to develop the application to further understand the direct needs of our disabled citizens for wayfinding and navigation. As a final product to the proposed program, a return on investment will be conducted to determine if performance goals were met, did the program actually work and increase notification of available access, and identify additional locations to implement the technology if it was deemed successful.

Parallel technologies:

Orlando has established regional structures and initiatives that are used to provide standards, architecture and a uniform certification process for many of its existing functions. It is anticipated that the City will build on this already solid foundation for the ITS and connected vehicle based technologies for documenting experience and improving Smart City products based on lessons learned. Some of these structures and initiatives are identified below.

- The City's Information Technology standards (including police and fire) are generated and maintained by the Information Technology Division (IT). Therefore, the City's

Transportation Department, as well as other City Departments, follow the guidance set forth by IT to ensure consistency.

- In addition, the City strives to provide the most recent and relevant technology for its citizens. Examples include being an early adopter of the White House Cloud First Policy (SaaS email system, IaaS Internet and Intranet hosting and SaaS ERP in the Cloud); Strong participation in the White House Open Data Initiative as a part of the City's transparency; and the City's Open Data Initiative.
- Finally, the City is adopting a cloud-based mobile PaaS and is creating government to citizen's applications as well as crowd sourcing using both City employees (mobile workers, police and fire), local technology community and citizens. These applications all require strong existing standards and architecture to ensure success. The City has already worked towards standardization with the regional transportation partners for: security, network and data standards. For security, the key points that have been identified include: a centrally managed user account database, such as Microsoft Active Directory; Authentication, Authorization, and Accounting (AAA) with a Remote Authentication Dial-In User Service (RADIUS) or Terminal Access Controller Access-Control System Plus (TACACS+) server. For the network, the region has deployed a project to ensure a unique IP addressing scheme in preparation for Connected Vehicles and other technology initiatives. In addition, the region is using a Hub and Spoke topology (discussed below) with each agency being allocated a unique Autonomous System Number (ASN) for use in Border Gateway Protocol (BGP) routing. Finally, Multiprotocol Label Switching (MPLS) will be used between regional partners' routers. In addition, due to the proposed Hub and Spoke design, it is proposed that FDOT would function as the administrative entity. For data, the region's preferred data format is JSON or XML for ease of data applications importation. Some additional examples of standardization include existing field based technology (sensors) that subscribe to Center to Field standards, including the applicable NTCIP standards. Regionally, central management software(s) have been or are being merged to place partner agencies on common platforms where possible throughout the region. Examples of these common platforms include SunGuide® (ATMS software), Asset Maintenance (MIMS), Road Ranger Management (RRMA), Web-based Interagency Video Data Sharing (iVDS) and traffic signal emergency vehicle preemption (EVP) and transit signal priority (TSP) Central Management system (CMS). In addition, the City's Traffic Advanced Traffic Signal Management (ATMS) software will share information via Center to Center standards with the platform as determined by an ATMS/Decision Support System project by April 2016. Finally, Orlando has an ongoing Connected Vehicle pilot that provides data back to the Traffic Management Center. After the standardization of various platforms, network, security and data sets, it is necessary to understand how regional communication will take place. The task of interconnecting numerous regional partners and data sources (including third party) is a significant undertaking. Fortunately, the Orlando region has already moved forward with a secure regional Wide-Area Network (WAN) topology. The regional WAN is proposed to be deployed in a hub and spoke physical network topology (see the above diagram) with the Florida Department of Transportation's Regional Traffic Management Center (RTMC) designated as the aggregate location for all of the partner agencies' connections.

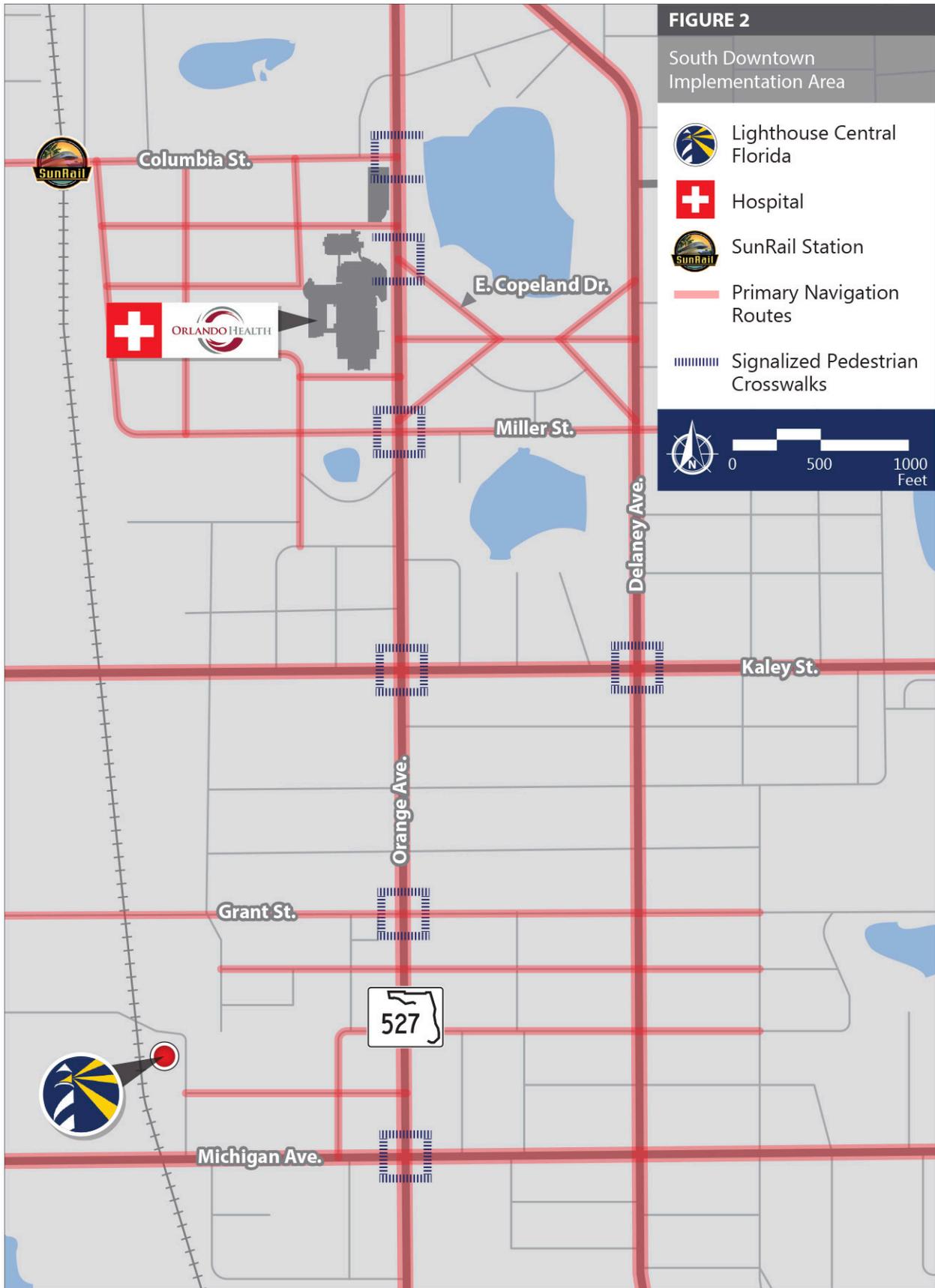
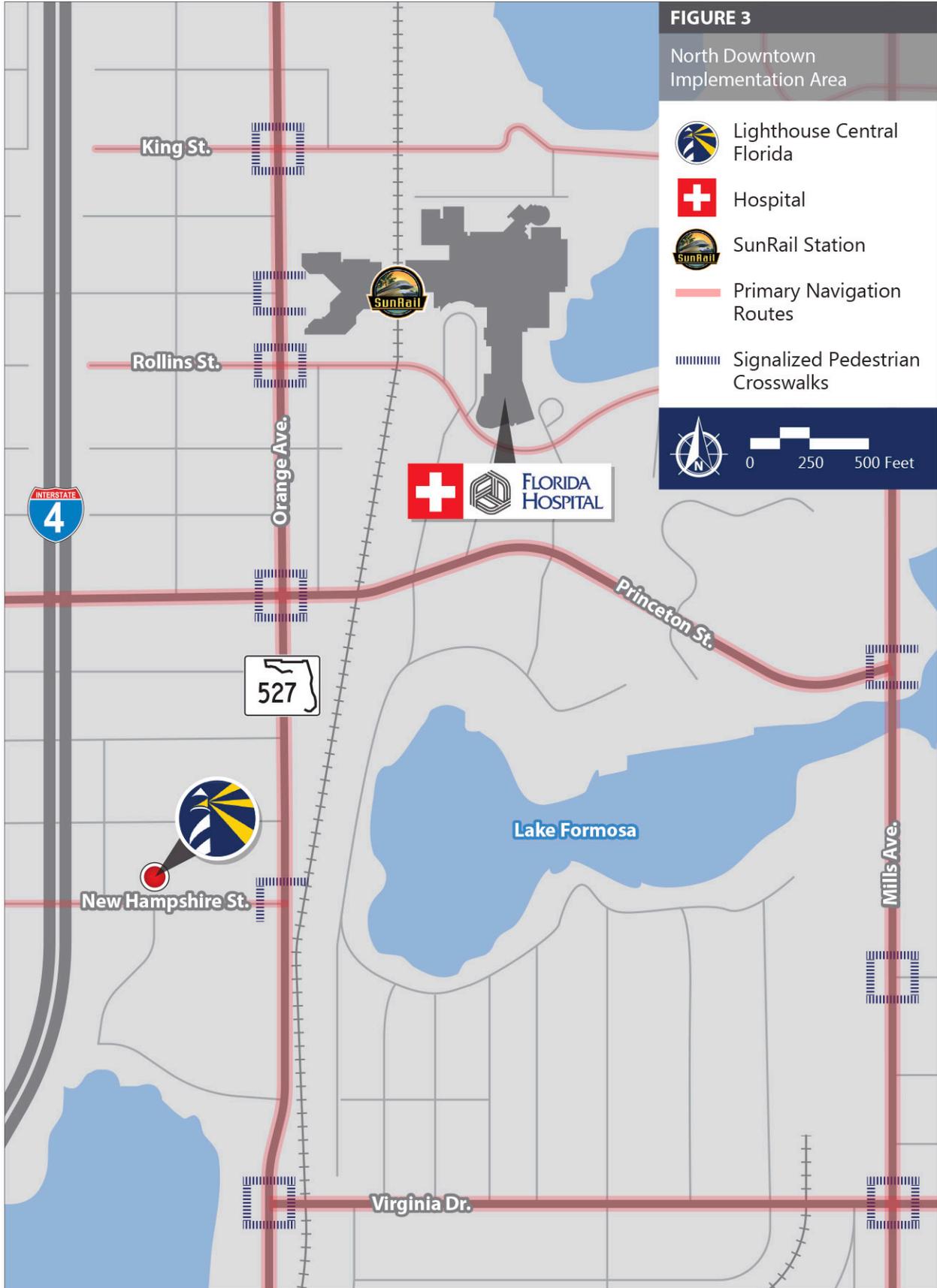


FIGURE 3

North Downtown
Implementation Area

-  Lighthouse Central Florida
-  Hospital
-  SunRail Station
-  Primary Navigation Routes
-  Signalized Pedestrian Crosswalks

  0 250 500 Feet



Part F: Statement of Work

As described in the ATTRI advertisement, this section will detail the planned scope of effort and project approach to the proposed application area is a safe intersection crossing which would utilize technology to assist those with visual, hearing, cognitive or mobility disabilities to navigate to their destination using the City’s pedestrian infrastructure. The following Statement of Work (SOW) sections will be completed to support the City’s initiative:

Table 1: Statement of Work Tasks

SOW No.	Description of Tasks
1	Project Management Plan
2	System Engineering
3	Technical Specification Development
4	Development and Deployment
5	Development Administration
6	Testing and Validation of Systems

SOW #1: Project Management Plan

The City will develop a Project Management Plan (PMP) that will be a guiding resource through the life of the project. The PMP will contain elements regarding the scope management plan, schedule management plan, communications management plan, cost management plan, quality management plan, stakeholder management plan, risk management plan, testing management plan, and the maintenance management plan. The City will host and attend regular meetings throughout the duration phase of the project:

- Kick-off Meeting
- Project Management Plan (PMP)
- Project Schedule
- Monthly Progress Reports
- Pre-Development Meeting
- Project Testing and Validation Meeting
- Project Closeout meeting

Minutes will be prepared for each meeting and monthly progress reports will be submitted detailing the work completed, descriptive progress, upcoming tasks, and action items.

SOW #2: System Engineering

The Systems Engineering Management Process (SEMP) is not only a requirement of this grant opportunity, it is required by the City to ensure that integration is seamless and that the identification of any risks is early in the process in order to minimize, reduce or eliminate the risk through the appropriate mitigation techniques.

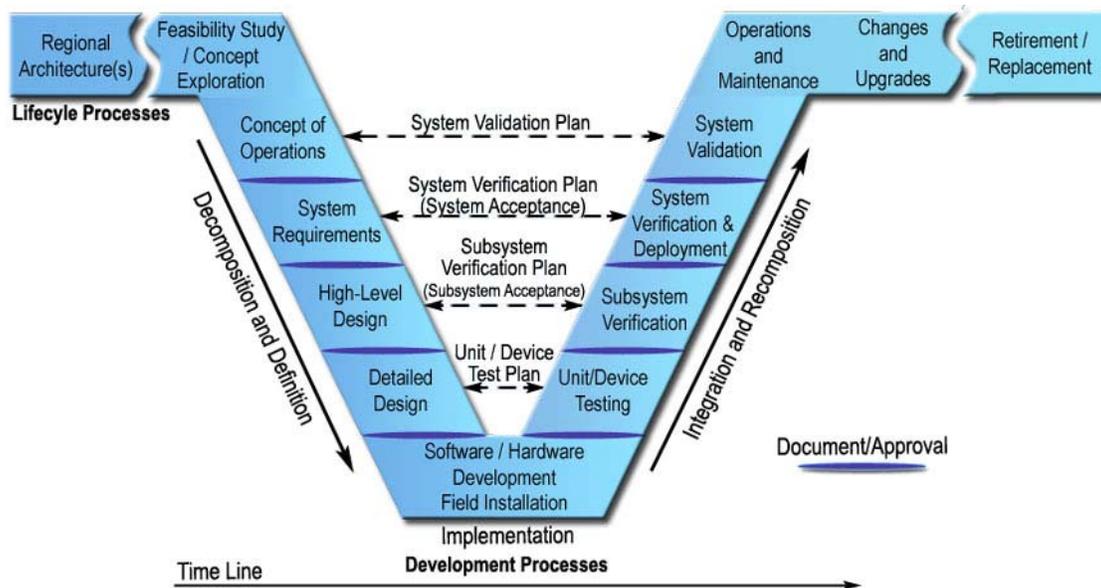
Prior to system application development and construction, the SEMP will be reviewed in coordination with USDOT and FHWA to evaluate the lifecycle of the projects. A detailed study on the Cities systems and needs to introduce new technology and operate the systems as part of the proposal will be completed. As part of the initial phase the Concept of Operations (ConOps) and SEMP reports will be prepared to document the overall technical process of construction, implementation and maintenance. The concept of operations or ConOps is a document that will guide the design of the integrated signal systems, back end hardware support requirements and identify fatal flaws.

The Concept of Operations (ConOps) is a foundation document that frames the overall system and sets the technical course for the project. Its purpose is to clearly convey a high-level view of the system to be developed that each stakeholder can consider the goals, objectives, directives and risks associated early in the process. It describes the who, what, why, where, and how of the project or system, including stakeholder needs and constraints. The ConOps outlines the stakeholder agreements on interrelationships and roles and responsibilities for the system. Further objectives includes an agreement on key performance measures and a basic plan for how the system will be validated at the end of project development.

The City of Orlando will develop the project SEMP documentation for the proposed SafeWayz System. Documentation to be developed includes the foundational ConOps, System Requirements, System Verification Plan, System Validation Plan, and Procurement Plan. The intent of the documentation is to ensure that a system engineering analysis process is used for development of this open data wayfinding and navigation project.

The project SEMP will be developed from the regional IT architecture provided by Florida Department of Transportation (FDOT) and the City's existing IT architecture. It will provide region-level information that can be used and expanded in project development and provide the project stakeholders with the opportunity to view the project in the context of surrounding systems. The project SEMP provides a comprehensive framework for how the pilot project fits within the overall vision for the region, and beyond.

Figure 5: Systems Engineering "V" Diagram



System Requirements

The stakeholder needs identified in the Concept of Operations are reviewed, analyzed, and transformed into verifiable requirements that define what the system will do. Working closely with stakeholders, the requirements are elicited, analyzed, validated, documented, and baselined. The objective is to develop a validated set of system requirements that meet the partnering needs that will promote the efficient movement of mobility for disable pedestrians through busy intersections. The System Requirements will establish the detailed architecture for implementing the area pilot implementation projects. In addition, the System Requirements section will further expand on the detailed performance measures desired to be monitored during the SafeWayz application implementation. The success of wayfinding and navigation assistance applications can have multiple performance measures. The following are some initial performance measures that can be considered to be expanded during the project development process with the US DOT and FHWA.

- Increased adoption of the application over time
- Positive response from user feedback
- Increased reporting of infrastructure issues to the open data store from the application
- Overall increase in accessible access for the City's Citizens

The proposed SafeWayz application will support the safe mobility of persons with visual, hearing, cognitive, and mobility disabilities.

System Verification Plan

This document outlines the plan and procedures to verify individual software, hardware components, subsystems, and integrated system meets the project requirements. The objectives are to verify that the SafeWayz program is deployed in accordance with the high-level design, requirements, and verification plans and procedures. To confirm that all interfaces have been correctly implemented and that all requirements and constraints have been satisfied. Proof of Concept testing will be required prior to deployment.

System Validation Plan

This document outlines the plan and procedures to validate the project. This document identifies a set of tests to make sure that the deployed system meets the original needs identified in the Concept of Operations for the SafeWayz program. Tests are to be conducted after the system has passed system verification and is installed in the operational environment. The objective is to confirm that the installed system meets the user's needs and is effective in meeting its intended purpose.

Procurement Plan

This document defines the procurement requirements for the project and how it will be managed from developing procurement documentation through contract closure. This Procurement Plan sets the procurement framework for this project. The Procurement Plan will, based on the results of the SEMP and ConOps, identify the vendor specific framework requirements to support the successful testing of the SafeWayz program.

SOW# 3: Technical Specification Development

The City of Orlando's IT specifications for user interface, ADA compliance and security will govern the work items in this contract. The technical specifications for the SafeWayz program will be developed in accordance with the City's IT architecture and general criteria outlined in the ATTRI system requirements. The City will work with the projects partners and stakeholders to gather an understanding of needs within the application. The City as applicant for this grant will secure sign-off from US DOT and FHWA prior to the implementation of the system. The development estimate will be re-verified during the SEMP and ConOps stage in order to revalidate and cost control the SafeWayz program.

SOW# 4: Development and Deployment

Development and deployment of the application will be in coordination of the selected Vendor or Consultant. The developer will be obligated to adhere to the standards outlined within the ATTRI grant requirements, FHWA/USDOT standards, and City standards for technology and application development.

SOW# 5: Development Administration

The City will monitor the development of the application and ensure that phases of the development are achieved on time as outlined in the Systems Engineering Report. The City will regularly report status of the development to FHWA and work with FHWA/USDOT and its contractor to guide the development and refinement of systems as the application development progresses.

SOW# 6: Testing and Validation of Systems

Prior to full deployment, a soft deployment will be implemented to validate the routing application based on data inputs. The system will be tested extensively during this period and used beyond its designed capabilities to understand flaws and coding issues prior to full deployment. During this period changelogs, bug and debugging reports as well as validation reports on routing will be collected and reported to FHWA/USDOT.

Part G: Schedule, Milestones, and Evaluation Metrics

The City of Orlando team will complete the development and deployment of the proposed SafeWayz program within 10-months of notice to proceed. The following schedule outlines milestones associated with the project. After deployment, system testing and validation is complete, the city will operate and monitor the system for a period of 12-months. At the end of the 12-month monitoring period, the City will conduct an evaluation of the performance of the proposed system. As a result of the findings, the City will implement a scalable program for integrating the SafeWayz program throughout Central Florida.

Table 2: Project Schedule and Cost Estimate

CLIN	Description	Due Date from time of award	Estimated Calendar Dates	Payment Amount
0001	Project Management Plan	1.5 weeks	11/2016	\$ 250,000.00
0002	System Engineering	6.5 Months	05/2017	
0003	Technical Specification Development	9.5 Months	08/2017	\$ 200,000.00
0004	Development and Deployment	13.5 Months	02/2018	\$ 450,000.00
0005	Testing and Validation Report	21.5 Months	10/2018	\$ 250,000.00
0006	Final Assessment	33.5 months	10/2019	\$ 175,000.00
	TOTAL:	33.5 months	10/2019	\$ 1,325,000.00

Table 3: Evaluation Matrix

Performance Objective	Performance Standard	Performance Threshold	Method of Surveillance
PRS# 1: The Contractor will provide the Project Management Plan within 1.5 weeks from Award.	Contractor to provide a complete Project Management Plan that covers individual task risk and mitigation.	All phases and task to have a completed management plan.	<i>The City will submit the final Project Management Plan to USDOT and FHWA.</i>
PRS# 2: The Contractor will develop and secure and approved Concept of Operations (ConOps) by April 2017.	Contractor shall develop and secure approval of the ConOps report from USDOT and FHWA.	Concept of Operations Report approved by USDOT and FHWA.	<i>Approval of the ConOps by USDOT and FHWA.</i>
PRS# 3: The Contractor will develop a System Engineering Management Plan (SEMP) by April 2017.	Contractor shall develop and secure approval of the SEMP report from USDOT and FHWA.	SEMP documentation approved by USDOT and FHWA.	<i>Approval of the SEMP by USDOT and FHWA.</i>
PRS# 4: The Contractor will finalize a comprehensive Systems Engineering Report by April 2017.	Contractor to provide a Systems Engineering Report that documents the infrastructure, system risks, technology needs as outlined in the ConOps and SEMP.	Approved System Requirements Report	<i>Submittal of the System Engineering Report to USDOT and FHWA.</i>
PRS# 5: Technical Specifications	Contractor to prepare technical specifications for deployment and estimated procurement costs	Approved Specifications and Costs	<i>Finalized specifications and construction plans by July 2017.</i>
PRS# 6: Development	The Contractor shall implement the development of the application within the standards identified in PRS# 5 (Technical Specifications).	Completion of application and deployment of SafeWayz pilot project.	<i>Clearance letter from City to USDOT and FHWA for completion of development of SafeWayz pilot project.</i>
PRS# 7: The Contractor will monitor and validate the performance of the SafeWayz program.	Contractor to monitor for 12-months the SafeWayz program and conduct a program evaluation.	Contractor to provide monitoring reports monthly (and cumulatively) to USDOT and FHWA.	<i>Monitoring reports and final documentation submitted to USDOT and FHWA.</i>

Part H: Deliverables and Products

The City will provide a final Application Program Interface (API) of the software developed for the SmartWayz application. A full detailed architecture map, change log, bug reporting with update logs and final reported metrics will also be supplied at the close of the pilot project.

There are no anticipated other data, or hardware deliverables associated with this application. The final product of this study will consist of an accessibility study to evaluate the effectiveness of the implementation, the meeting or exceeding of performance measures. This study will be conducted after one year of implementation in each of the two implementation areas. The SmartWayz application will evaluate the performance metrics described in the vision which include:

- Overall feedback of application
- Overall miles routed and traveled
- Overall number of infrastructure issues reported by users
- Response time to identified issues
- Overall number of application downloads

The final study will be made available to FHWA for distribution to any interested parties via the project public website.

Table 4: Project Deliverables Matrix

Deliverable	Print Ready	Frequency	# of Copies	Medium/Format	Submit To
Project Management Plan	<i>Yes</i>	Once	1 – Electronic Copy 10 – Hard Copies (additional copies upon request)	<i>Electronic (PDF), Hard Copy</i>	<i>USDOT and FHWA</i>
System Planning Report	<i>Yes</i>	Once	1 – Electronic Copy 10 – Hard Copies (additional copies upon request)	<i>Electronic (PDF), Hard Copy</i>	<i>USDOT and FHWA</i>
Technical Specifications	<i>Yes</i>	Once	1 – Electronic Copy	<i>Electronic (PDF), Hard Copy</i>	<i>USDOT and FHWA</i>
System Testing and Validation Reports	<i>Yes</i>	Once	1 – Electronic Copy	<i>Electronic (PDF), Hard Copy</i>	<i>USDOT and FHWA</i>
Program Evaluation Report	<i>Yes</i>	Once for final product (monitor reports submitted monthly)	25 – Electronic Copies (USB Flash Drives) 25 – Hard Copies (additional copies upon request)	<i>Electronic (PDF), Hard Copy</i>	<i>USDOT and FHWA</i>

Part I: Proprietary Claims

There are no anticipated proprietary claims associated with the proposed implementation of the SafeWayz pilot projects or program. In addition, the City is not proposing the use of proprietary software or hardware during the SafeWayz pilot project or program.

Part J: Management Plan

The City will provide a project manager to provide overall direction to product activity and has previously described in this proposal to accomplish the work in six work phases:

- Task 0001 – Project Management Plan
- Task 0002 – System Engineering
- Task 0003 – Architecture development
- Task 0004 – Application Development
- Task 0005 – Testing and Validation Report
- Task 0006 – Final Assessment

The City's PM will work with consultants and vendors to develop a the PMP. This will contain elements regarding the scope management plan, schedule management plan, communications management plan, cost management plan, quality management plan, stakeholder management plan, risk management plan, testing management plan, and the maintenance management plan. The key element of the plan will be to clearly spell out the goals to be achieved in each phase, responsible parties, and schedule of activities. The PM will ensure regular communications between the City, Consultants, and Vendors as well as internal and external partners:

- Florida Department of Transportation
- Lighthouse Central Florida
- Lynx (Central Florida Regional Transportation Authority)
- MetroPlan Orlando
- University of Central Florida
- Vanasse Hangen Brustlin, Inc.

The following diagram shows the relationships between the client (FHWA), prime contractor (City of Orlando), Consultants and Vendors.

Figure 6: Management Organization



Part K: Technology Transition Plan

The proposed SafeWayz program will leverage the existing open source data platform the City has developed. The proposed application to the topic area will produce a wayfinding and navigation app that provides visual, audible and haptic (vibration) feedback to assist with destination routing. While the app will provide information to all pedestrians, it will focus to provide precise, and enhanced information for persons with disabilities. The platform will test the ability to utilize open data platforms to crowdsource information. Tying these systems together creates a living data source that is updated by the users of the facilities and infrastructure. Issues reported are provided to the City maintenance department for immediate response. At completion, the app should be fully serviceable within the pilot test areas and reporting user feedback, identified issues and use statistics. Understanding the overall effort from data needed, development of an assistive application, backend technology support and scalability are expected to be reported out of this project and will be used to guide funding decisions for a City wide assistive application. Upon a successful closeout, the City would understand the effect of the application and begin to develop a larger pilot area as a secondary phase for implementation.

Part L: Facilities

This proposal effort includes various divisions within the City of Orlando, as well as, detailed sections of the public street network that would be utilized for testing and implementation of the SafeWayz program. The following highlights the units advancing the initiative, consistent with Part N (Key Personnel):

- *Orlando Roadways Maintenance* – operations and fleet management
- *Traffic Operations* – system evaluation, safety evaluation and project operations
- *Orlando Information Technology Division* – open data management and API oversight
- *Streets and Stormwater Division* – sidewalks and roadway pavement
- *Transportation Systems* – ConOps and SEMP development
- *Transportation Engineering* – constructability reviews and quality control

The objective of SafeWayz is to provide wayfinding and navigation for the City's disabled populations as pedestrians. A key component of this proposal is understanding the technical specifications that are required for the development of these types of assistive applications, and how to better serve our citizens using our technology resources. Two implementation areas within the City of Orlando, as illustrated in Figure 1, have been selected for deployment due to their proximity to primary medical facilities, visually impaired assistance centers, elderly housing facilities, and major pedestrian generators. A description of the public street network sections that would be included in this proposal is below.

- *South Section* – This section is bordered by Delaney Avenue on the east, Columbia Street on the north, Division Street on the west, and Michigan St on the south. Points of interest within this section are the Orlando Health medical facilities, Lighthouse of Central Florida, Orange County Supervisor of Elections, and a Super Target shopping center. This section contains 6 signalized intersections along the South Orange Avenue corridor. Each of these intersections has signalized pedestrian crossings with countdown pedestrian timers. None of these intersections is currently enabled with Accessible Pedestrian Signals (APS). There are 21 Lynx bus transit stops and one (1) SunRail transit stop located within this section. There is currently a planned resurfacing, restoration, and rehabilitation (RRR) project planned for Orange Avenue within this section from south of Michigan Street to Grant Street. This project will include milling and resurfacing of Orange Avenue, sidewalk and curb ramp reconstruction to ensure ADA compliance, and streetscaping improvements.
- *North Section* – This section is formed by the North Orange Avenue corridor from Virginia Drive in the south to East King Street in the north and bounded on the western and eastern sides by Interstate 4 and Mills Avenue (US 17/92), respectively. Points of interest near this corridor include the Florida Hospital medical facilities, Lighthouse of Central Florida, Gaston Edwards Park and Loch Haven Park. This section contains six (6) signalized intersections along the North Orange Avenue corridor. Each of these intersections has signalized pedestrian crossings with countdown pedestrian timers. Three intersections are currently enabled with Accessible Pedestrian Signals (APS). There are 11 Lynx bus transit stops and one (1) SunRail transit stop located along or near this section. This area is also met with large grade changes and opportunities to understand best routing practices for different mobility assistive devices.

Part M: Experience

Mr. Ramdatt, as the Deputy Public Works Director & City Transportation Engineer has been the executive in charge of the City's overall efforts to improve the transportation system. The City of Orlando has a strong commitment to pedestrian safety and history of using innovative technologies to improve the safety of the traveling public. **Mr. Bonney** and **Mr. Braud** has been leading the effort The City has been upgrading the intelligent transportation systems (ITS) communications system with the goal to have all of our nearly 500 signalized intersections communicating via a layered Ethernet system, most of them over fiber optic cables. This allows us to monitor the operations of the traffic network from the City's traffic management center (TMC), which we staff 24 hours per day and 365 days per year. Our standard is to install video vehicle detection with streaming video at all new or reconstructed signalized intersections and CCTV surveillance cameras at critical intersections. Our traffic signal maintenance technicians are well versed in maintaining video systems, microwave detection, Ethernet network equipment, etc from multiple vendors. We also have established relationships the vendors, consultants, and contractors. We also have a long-standing program of cooperation among our regional partners including neighboring counties and the Florida Department of Transportation (FDOT). An example is the City and FDOT teamed to upgrade over 32 miles of communications lines and over 135 signalized intersections to Ethernet over fiber optic cable over the past two years.

The City has also had a consistent effort to provide a safe walking environment, especially for those with limited vision. **Dr. Consoli** and his staff, including **Mr. Crow** have worked closely with the [Lighthouse of Central Florida](#) to identify major attractors and corridors used by the visually impaired. This has driven the program of installing audible pedestrian detectors at numerous locations in the City. This program is based on a detailed analysis of all crash reports led by **Mr. Leirias**. He reviews the long report for all crash reports to determine causes and potential mitigation efforts. The City's efforts to improve guidance to visually-impaired require close coordination with the Streets and Stormwater Division to ensure improvements meet the requirements of the Americans with Disabilities Act (ADA) guidelines for improvements in right of way. **Ms. Henry** and her staff works closely with Transportation Engineering to ensure all sidewalk, curb ramp, and pavement work is performed according to national, state, and City standards.

Part N: Key Personnel

The following is a list of the key personnel for that have are committed and assigned to the relevant project efforts defined:

Name: Charles A. Ramdatt, PE, PTOE
Title: Deputy Public Works Director & City Transportation Engineer
Role: Project Principal
Project Effort: 58

Name: Lisa J Henry, PE
Title: Streets and Stormwater Division Manager
Role: Deputy Project Principal, Sidewalks and Roadway Pavements
Project Effort: 31

Name: Benton StJ Bonney, PE
Title: Transportation Systems Manager
Role: Project Manager
Project Effort: 204

Name: Cade M Braud, PE
Title: Signal Systems Engineer
Role: Deputy Project Manager
Project Effort: 114

Name: Frank A. Consoli, PhD, PE, LEED AP BD+C
Title: Traffic Operations Engineer
Role: QA/QC, constructability reviews
Project Effort: 42

Name: Jeremy M. Crow, PE
Title: Civil Engineer IV
Role: Traffic safety studies, identification of study locations
Project Effort: 66

Name: Cesar D Leirias, PE
Title: Civil Engineer IV
Role: Traffic safety studies, crash report analysis
Project Effort: 42

Charles A. Ramdatt, P.E., PTOE, AICP
City of Orlando Public Works Department
400 S. Orange Avenue, Orlando, FL 32801

Work (407) 246-3186, charles.ramdatt@cityoforlando.net

Tenured Civil Engineer & Urban Planner with extensive experience as a consensus builder, leader of diverse professional teams, public presenter/speaker, infrastructure planner & implementer

REGIONAL CENTRAL FLORIDA PROFILE

Central Florida Expressway Authority – Current member and former chairperson of Operations Committee

MetroPlan Orlando, the legally mandated regional planning organization for the tri-county area which constitutes Greater Orlando – Former Transportation Technical Committee Chair and Board Member

EMPLOYMENT HISTORY

Current Deputy Director of Public Works – Transportation Engineer, City of Orlando, Florida. Portfolio includes transportation engineering, inter-agency coordination, special event management and parking systems management

History Over 30 years of progressive civil engineering, transportation engineering, parking management and project management experience

EDUCATION

Current Doctoral Studies – Dissertation Stage, Civil Engineering, University of Central Florida

History Bachelor and Master of Science Degrees, Transportation Focus, University of Central Florida

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

Registered Engineer, State of Florida Board of Professional Engineers, since 1990 - License # 42703

American Institute of Certified Planners (AICP)

Certified Professional Traffic Operations Engineer, by the Institute of Transportation Engineers

Fellow of the Institute of Transportation Engineers

Lisa Henry, P.E.

City of Orlando Public Works Department

1010 Woods Avenue, Orlando, FL 32805

Work (407) 246-3646, lisa.henry@cityoforlando.net

Diversified Engineer and Construction Manager with extensive experience in right of way asset construction as well as spearheading public and private collaborative projects.

EMPLOYMENT HISTORY

Current Division Manager, Streets and Stormwater Utility Services

Duties and Responsibilities include Right of Way asset maintenance including all sidewalks, ADA compliant ramps, pavement rehabilitation techniques and implementation, as well as interagency and intra-agency coordination on projects and strategic planning

History Over 20 years of progressive experience in construction, project management, and civil, transportation and storm water engineering/management

ASSOCIATIONS AND AFFILIATIONS

APWA Current member and Co-chairperson of PWX2017 Volunteer Committee and the Technical Tours Committee

Florida Stormwater Association (FSA) member and membership committee member

Association of State Floodplain Managers (ASFPM) member

EDUCATION

Bachelor of Science in Engineering, Transportation Focus,

Purdue University, West Lafayette, Indiana

Master of Business Administration, Production and Operations Management Focus,
Crummer Graduate School of Business, Rollins College

PROFESSIONAL AFFILIATIONS & REGISTRATIONS

Registered Engineer, State of Florida Board of Professional Engineers,

License # 81295

Certified Floodplain Manager(CFM)

License #3402

Certified Building Contractor, State of Florida Certified Building Contractor

License #CBC058068



Benton St. John Bonney, P.E.

Transportation Systems Manager
Transportation Engineering Division
Public Works Department - City of Orlando
400 South Orange Avenue
Orlando, FL 32801-3302

Email: benton.bonney@cityoforlando.net
Work: 407-246-3626

Mr. Bonney manages the City of Orlando's Transportation Systems section, which includes the Traffic Signal Maintenance Shop and Computerized Signal System (Traffic Management Center). He develops intelligent transportation system (ITS) plans, prepares and reviews traffic signalization plans, reviews land development plans, and coordinates with the City's transportation planning and parking divisions. He is leading the conversion of the City's ITS communications system to a state-of-the-art fiber-optic Ethernet system.

He was previously the responsible engineer in charge of all Wilbur Smith Associates Florida traffic engineering design activities and supervised the traffic engineering design/planning team and coordinates with other disciplines. He also directed the preparation of transportation control plans for major highway projects and was responsible for developing system-level and design-hour traffic forecasts.

Education

Graduate studies in transportation engineering, University of Florida (1988-1990)
Graduate and undergraduate level Civil and military engineering courses, School of Engineering and Service, Air Force Institute of Technology (1981-1987)
M.E., Traffic and Transportation Engineering, University of South Carolina (1980)
B.S.E., Civil Engineering, University of South Carolina (1979)

Experience: Total professional: 37 years, City of Orlando: 8 years

Professional Registrations

Professional Engineer: Florida, South Carolina, Kentucky

Technical Specialties

Traffic Engineering
Intelligent Transportation Systems
Program Management
Project Management

Professional Affiliations

Fellow – Institute of Transportation Engineers (ITE), 2014 Edward A. Muller District 10
Transportation Engineer of the Year
Member – American Society of Civil Engineers (ASCE)
Member – Society of American Military Engineers (SAME)

CADE BRAUD, PE, PTOE

EDUCATION:

B.S., Civil Engineering, Louisiana State University

PROFESSIONAL REGISTRATIONS:

Professional Engineer – FL # 64488

Professional Traffic Operations Engineer–FL # 977

YEARS OF EXPERIENCE: 20 years

Signal Systems Engineer, City of Orlando - Cade is presently serving as the City of Orlando's Signal Systems Engineer and manages a 24/7 Traffic Management Center. In this role, he supervises a team of Computer Operators and a Retiming Engineer that are responsible for the operation and maintenance of just under 500 computerized traffic signals, over 100 CCTV cameras, 11 Dynamic Message Signs, and various other ITS Devices. He is involved with traffic signal retiming projects that determine the appropriate amounts of pedestrian crossing times at signalized intersections.

Road Safety Audit (RSA), Safety Studies, and Operational Studies Contract FDOT District 2 - The project included conducting off-system corridor and intersection safety studies. Safety studies completed have included CR 218 (Clay County), Normandy Blvd at Chaffee Road (Duval County), CR 252 (Pinemount Road) at Birley Ave (Columbia County), and CR 20A (Putnam County). The safety studies involved operational and benefit/cost analyses, conceptual improvements, cost estimates, and safety recommendations targeting the emphasis areas. Additional tasks included development of a GIS based crash data query tool (TSAT), in-house services in support of the District's Safe Routes to School Program, development of a conceptual sidewalk plan for Atlantic Beach Elementary, plus other miscellaneous services.

Continuing Services Contract (3 consecutive 5 year contracts, 2001-2016): Traffic Signal System Retiming & Traffic Engineering Studies, FDOT District 5 - Professional transportation, planning, and engineering services for assigned traffic operational/safety studies and plan preparation throughout Central Florida. The traffic analysis and conceptual recommendations produced were then used in the development of construction plans, incorporated into traffic operational/safety improvement projects or in the case of traffic signal timing plans, implemented directly into the field. Typical tasks included Arterial Retiming, Signal Warrant Analysis, Intersection Analysis, Roadway Study, Composite Study, Signal Inspections, Design Survey, Signal and Roadway Plans Design, Subsurface Utility Locating, and Traffic Volume and Classification Counts.

Traffic Signalization Improvement Program, Broward County Public Works – Responsibilities included providing professional engineering consulting services to assist in the conceptual planning of the County's Traffic Signalization and Signal Engineering Improvement (SEI), implementation of a data management and tracking system for installed fiber optic cables, assistance in improving the signal timing strategy and its integration with the County's traffic communication network, design criteria and consistency review services resulting from the conceptual planning, and construction management services. Served as the Design Criteria Consultant for a Design-Build project to convert 40 intersections from span wire to mast arm mounted traffic signals. This includes the development of the design-build criteria package for the project, preparing cost estimates, and working closely with County staff to identify equipment preferences.

Resume

Frank A. Consoli, PhD., P.E., LEED AP

EDUCATION

Bachelor of Science in Geology: University of Miami
Bachelor of Science in Civil Engineering: University of Miami
Master of Engineering in Civil Engineering: University of Florida
Ph.D. in Civil Engineering: University of Central Florida

EXPERIENCE

I have over 34 years of Civil Engineering experience including 10 years with the City of Orlando as Traffic Operations Engineer, 11 years with the Florida Department of Transportation in District Six (Senior Program Manager) and Turnpike (Turnpike Specification Engineer) and the remaining experience with consulting engineering firms as a Resident Engineer/ Senior Project Engineer involving FDOT, CFX and Turnpike. Part of my duties at the City of Orlando include review and installation of audible pedestrian signals, review of ADA accessible curb ramps and pavement markings for safe pedestrian crosswalks including as a member of the Best Foot Forward pedestrian safety collation.

PROFESSIONAL REGISTRATIONS

Professional Engineer, State of Florida No. 0038583
LEED AP Building Design/Construction

TRAINING SEMINARS and CERTIFICATIONS

FDOT CTQP Qualifications: Asphalt Paving- Level I & II
Earthwork- Level I & II
Quality Control Manager
Drill Shaft Inspection
IMSA Signing and Marking- Level II
Florida DEP Storm-water Management Inspector October 30, 2002 (Re-certified March 2014)
Advanced Maintenance of Traffic- ATSSA, Refresher 2014
FHWA Pedestrian Safety 2011 and 2015
FHWA Advanced Traffic Incident Management 2010
ADA Training January 2014
Accessible Pedestrian Signals February 2014

Jeremy M. Crowe, P.E., P.T.O.E.

Civil Engineer IV
Transportation Engineering Division
Public Work Department - City of Orlando
400 South Orange Avenue
Orlando, FL 32801
E-mail: jeremy.crowe@cityoforlando.net
Work: (407) 246-3262

Mr. Jeremy Crowe has over 6 years of experience working in the City of Orlando Transportation Engineering Division. His duties as a Civil Engineer have included management or traffic data collection, analysis and review of traffic control warrant studies, reviews of compliance with the Americans with Disabilities Act standards, traffic models using simulation software, and preparation and review of design plans. Along with technical work, Mr. Crowe has worked coordinated with City of Orlando staff, design managers, project managers, property owners, and citizens when evaluating, analyzing, and developing solutions for challenges and requests presented to the City.

Education:

University of Central Florida	Orlando, FL
Master of Science – Civil Engineering/Transportation Systems	August 2009
Florida Institute of Technology	Melbourne, FL
Bachelor of Science – Civil Engineering	December 2007

Work Experience:

City of Orlando Transportation Engineering	Orlando, FL
Civil Engineer IV	February 2009-Present

Professional Certifications:

Professional Engineer – Florida PE #77064
Professional Traffic Operations Engineer – PTOE #3851

Technical Certifications:

FDOT - Advanced Maintenance of Traffic Certification
FTTTC – ADA Accessibility Requirements for Highway Design & Pedestrians
IMSA - Signs & Pavement Markings Technician Level 3 – Florida #77064
IMSA - Traffic Signal Technician Level 1 – Florida #3851
Stormwater Management Inspector – Florida #25296

Professional Affiliations:

Institute of Transportation Engineers – Member
American Society of Civil Engineers – Member
International Municipal Signal Association – Member

CESAR LEIRIAS, P.E.

Transportation Engineer

Orlando, Florida

c.leirias@hotmail.com

c: 407-247-8615

PROFESSIONAL EXPERIENCE

Mr. Cesar Leirias is a Florida P.E. with over 10 years of experience as an intern and engineer working on projects in the transportation field. While attending college for his Bachelor's Degree, Mr. Leirias worked as an intern at the County Department of Transportation (Porto Alegre/Brazil). The primary focus of the internship was to perform safety analysis and to design countermeasures to enhance roadway safety for nearly one million drivers in the county. Later, Mr. Leirias held another internship in the State's Transportation Planning Division (MetroPlan Rio Grande do Sul/Brazil) performing data collection and statistical analysis for the inter-municipalities transit system.

In his last internship, prior to his graduation, Mr. Leirias worked for the State Department of Transportation (State of Rio Grande do Sul/Brazil). At this department, Cesar was allocated to the Committee of Public Bids, where he learned how to analyze proposals submitted by bidders as well as to check for compliances with the State's Design Standards and original plans. Mr. Leirias began his professional career at Magna Engineering Inc., which was at that time the third largest engineering firm in the state of Rio Grande do Sul/Brazil. He worked for 2 years estimating costs and preparing proposals for state and counties public sealed bids.

In February of 2011, Cesar was hired by the City of Orlando as a Civil Engineer in the Public Works Department - Transportation Engineering Division. Mr. Leirias manages Audible Pedestrian Signals projects, and ensures compliance with the Americans with Disabilities Act and the Manual on Uniform Traffic Control Devices criteria. Cesar also performs Pedestrian and Vehicular Safety Analysis, Speed and Volume Studies, Traffic Signal Warrant Analysis, All Way Stop Warrant Analysis, Mid-block Crossing Analysis, Parking Restrictions Analysis, Left Turn Protected/Permitted Analysis among other studies. He is a member of the Orange County Community Traffic Safety Team (OC CTST) and Best Foot Forward Committees. Mr. Leirias also manages small to mid-size construction projects.

EDUCATION

- Bachelor's Degree in Civil Engineering – Lutheran University of Brazil, Brazil
- Master's Degree in Transportation Systems – UCF – University of Central Florida

SKILLS

- Language: - Proficient in English and Portuguese
- Speaks Spanish

CERTIFICATES

- FHWA - Pedestrian Safety Training Certificate
- FDEP - Erosion Control Inspector
- FDOT - Advanced Maintenance of Traffic
- FTTTC – ADA Accessibility Requirements for Highway Design & Pedestrian
- City of Orlando – Defensive Driving Course

Part O: Qualifications

Charles A. Ramdatt, PE, PTOE

Project Principal

Deputy Public Works Director & City Transportation Engineer; in responsible charge for Transportation Engineering Division as well as management of all transportation projects, inter-agency coordination, special event management and parking systems management

Lisa J Henry, PE

Deputy Project Principal, Sidewalks and Roadway Pavements

Streets and Stormwater Division Manager; in responsible charge of maintenance and right of way asset maintenance including all sidewalks, ADA compliant ramps, pavement rehabilitation techniques and implementation, as well as interagency and intra-agency coordination on projects and strategic planning in the City of Orlando.

Benton StJ Bonney, PE

Project Manager

Transportation Systems Manager; in responsible charge of all traffic signal maintenance and construction, Traffic Management Center, and ITS network maintenance and operations for City of Orlando. Also manages all signalization and ITS project performed in the City, whether by City or other parties.

Cade M Braud, PE

Deputy Project Manager

Signal Systems Engineer; in responsible charge of Traffic Management Center and Regional Computerized Signal System (RCSS). Also manages traffic signal and ITS projects within the City. Mr. Braud is also currently managing the City's travel time element of the City's parking information system by installing BlueMAC Bluetooth travel time detectors on City streets and inside City garages and integrating them into the FDOT's travel time network.

Frank A. Consoli, PhD, PE, LEED AP BD+C

QA/QC, constructability reviews

Traffic Operations Engineer; responsible for traffic studies, signing and pavement marking maintenance, and special event management teams. He directs the professionals dealing with pedestrian safety project from the first citizen input or crash study analysis to traffic operations analysis to the installation by contractor and City forces. He also has experience in construction management and constructability reviews.

Jeremy M. Crow, PE

Traffic safety studies, identification of study locations

Civil Engineer IV; responsible for reviewing identified safety concerns, citizen input, and proposed improvements. He makes recommendations on ways to correct deficiencies.

Cesar D Leirias, PE

Traffic safety studies, crash report analysis

Civil Engineer IV; leads the traffic safety analysis and crash report analysis to identify high crash locations and propose corrective actions.

Part P: Other Proposals

The City of Orlando is also submitting a proposal for Topic Number 3: Safe Pedestrian Crossing. The SafeX program within the proposal will provide a safe crossing for pedestrians and persons with disabilities that require additional time to cross an intersection, and provide additional alerts to drivers who are approaching an area where pedestrians are detected. This program, working with the SafeWayz program will produce information that can be used to understand the use of these technologies, scalability, and return on investment.